# Marketing of Agricultural Products

RICHARD L. KOHLS, PH.D.
DEPARTMENT OF AGRICULTURAL ECONOMICS
PURDUE UNIVERSITY

ANGRAU Central Library
Hyderabad
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The Macmillan Company, New York

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PRINTED IN THE UNITED STATES OF AMERICA

FIRST PRINTING

MY GRANDPARENTS—

TO WHOM I OWE MY INTEREST
IN AGRICULTURE

# PREFACE

In this time of ever-increasing emphasis on the marketing phase of our economy, no explanation is needed for the addition of another book to the field of study of agricultural marketing. This book is written primarily for those who are just beginning their study of the marketing of farm products. It is also designed for the use of both students who have had little or no previous contact with economics and those who have had elementary economics. The chapters on elementary price theory may easily be omitted for the latter group.

The viewpoint taken is that of the farm producer and those most interested in the farmers' problems and well-being. It does not lay claim to being a complete text adequately covering all phases of marketing. The commodity chapters must of necessity treat inadequately some things which many instructors feel important. For after all, entire texts are devoted to the study of individual commodities. Those who have a primary interest in food processing, wholesaling, and retailing should seek elsewhere for detailed treatment. These areas are presented here in a summary form. However, the chapters on government, food processing, and food wholesaling and retailing are included because agricultural students must be brought into contact with the entire picture. The belief is far too prevalent among farm groups that marketing is completed when the farmer sells his products and what occurs after this point is of no concern to them.

The approach of the book is a mixed one—partly functional, partly institutional, and partly by commodities. Part I, "The Framework of the Marketing Problem," attempts to sketch in a broad way the nature of producers and consumers which the marketing structure must serve. Part II, "Some Functional Problems," discusses the development and problems in securing adequate performance of some of the marketing functions. Part III, "Commodity and Institutional Problems," particularizes these marketing problems from the standpoint of the several agricultural commodities and business and government structures. Marketing often has a reputation of being a stuffy, dry area of study. This is not because of the subject matter, but rather because of our shortcomings in its presentation.

It is the author's conviction that marketing cannot be successfully taught in a completely abstract framework. Students do most of their learning in the framework of the familiar—hogs, milk, the retail food store, and so on. It is hoped that the mixed approach of the text will make the subject area more palatable and in doing so will enhance the learning process.

A conscious effort has been made to document the text rather heavily. No claim is made for complete bibliographies and references. Rather it is hoped that those presented will encourage further study, or at least call attention to the immense volume of marketing literature which is now flowing forth. On the other hand, many specific details have been omitted, since any marketing teacher worth his salt will supplement any text heavily with illustrations and data which have particular application to his students.

The author presents this text with great humility and recognizes, at least in part, many of its shortcomings. The challenge to set down on a relatively few pages a word picture of this highly diverse and complex field is a great one. The author has sought and received much help and counsel from his colleagues at Purdue University. Dr. J. W. Wiley of the Department of Economics was of immeasurable assistance in developing the chapters on price theory and imperfect competition. Dr. C. B. Cox, who directly contributed the material on cotton and tobacco, also aided greatly in preparing the chapter on agricultural cooperation. Professor J. C. Bottum advised on the presentation of price policy. Professors J. W. Hicks, P. L. Farris, and C. E. French also gave of their time and advice in many areas. To the administrative staff of the University the author also owes a debt of gratitude for their understanding attitude, for only with such understanding can most staff members at a land grant institution find the necessary time to complete such a project. And to his wife, Irene, who read the manuscript and challenged him to present the material in as simple and understandable language as he could, the author acknowledges a very special debt. Of course, the author accepts all the responsibility for what finally has been presented.

R. L. Kohls

*Purdue University*

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*Part I*

# THE FRAMEWORK OF THE MARKETING PROBLEM

CHAPTER ONE

# The Marketing Problem

## WHAT IS MARKETING?

Have you ever watched a housewife shop in a modern supermarket? As she pushes her cart down the aisles, she casually picks and chooses from among literally hundreds of different canned items. She may stop at the dairy case and select her cheeses from among dozens of different varieties. At the meat counter she must decide not only between the various cuts of fresh meat but also from a tremendous array of all types of luncheon and precooked meats. Continuing on, she may pick up a can of frozen orange juice and a carton of frozen shrimp from the deep freeze cabinet. At another rack she may be faced with perhaps twenty to thirty different kinds of fresh produce. On her way out she may pick up a loaf of bread which was baked just today. Or she may decide that she wants to do her own baking and can choose between either ready-for-baking biscuits packed in a vacuum tin or a box which contains all of the dry ingredients ready for mixing.

Then listen to this housewife at the check-out counter. She makes no comment concerning the tremendous variety of goods at her disposal. Rather, she is more likely to make some bitter remark about her favorite brand of frozen peas being out of stock! Then, with perhaps a parting remark about the high cost of food, she pays her bill and departs. This scene could be one in New York City or in a small middle western town. It could be happening in the heat of the summer or the cold of the winter.

Here we see the end product—goods available for consumption—of the tremendous marketing organization of the country. Here also, in the housewife's casual acceptance of this vast array of foods at her disposal, we have the vote of confidence of the American consumer that the system works.

*Marketing Is Complex and Costly*

The machinery which brings this vast array of food products together and places them at the disposal of over 160 million consumers is very extensive and complex. The initial production of the raw materials for these foods took place on over 5 million farms scattered throughout the country. Some farms produce extremely small amounts of a great many commodities. Other farms produce large amounts of only a single commodity. The product itself is often perishable and widely varying in quality. To a considerable extent the bulk of this production is highly seasonal and takes place in areas that are great distances away from the areas where consumers are concentrated. These products from the nation's farms must be collected, sorted, and swiftly moved before they spoil, or, as the case may be, stored until they are needed. Nearly three-fifths of these farm products must be processed further before they are ready for consumers.

To do this job some 20,000 firms buy these farm products in the production area and send them forward to other concentration points. Approximately 50,000 manufacturers are engaged in processing food. Food products are then assembled into the hands of about 60,000 food wholesalers, who in turn supply some 500,000 retail food stores and 350,000 restaurants and eating places.

To accomplish such an operation costs large sums of money. In 1953, the retail value of all farm foods was estimated at 44 billion dollars. Of this amount 24.5 billion dollars went to pay for the costs of processing and marketing. This meant that for each dollar the consumer spent for food, about 45 cents went to the farmers to pay for the raw farm products and about 55 cents went to the above-mentioned marketing agencies to pay for processing and handling. However, when one stops to think about the job which is accomplished, its high cost is not the outstanding factor. Rather, it is amazing that such a task is accomplished at almost any cost!

*Marketing Is Productive*

Unfortunately many look upon those who are engaged in the many marketing jobs such as grading, transporting, storing, arranging for the transfer of title, and advancing and collecting credit, as being parasitic on those who really "produce" the goods. Farmers often decry the "profits of middlemen" because they think that farmers alone produce the food which people eat. Of course, we realize that they produce only the raw materials from which the consumer's food is finally made. The farmer who produces a hog in Iowa has not produced pork for a housewife in New York. Many things must be done to the hog before it is pork in New York. These other

activities are the contributions which the packers, railroads, truckers, livestock commission men, and retail butchers make to pork production.

Economists have defined production as the creation of utility—that is, the process of making useful goods and services. The utilities created in the productive processes are further classified into *form* utility, *place* utility, *time* utility, and *possession* utility.

The farmer who produces hogs adds form utility. The packer who slaughters the hogs and cuts them into pork carcasses also adds form utility. They change the form of raw materials and create something useful.

The railroad or trucker that moves the hogs from Iowa to the packing plant, and then, after processing, moves the cuts of pork on to wholesalers, retailers, and finally to consumers adds place utility. The product is more useful because of the activities of these agencies in getting the product to where it is most desired.

The packer furthermore may freeze some of the pork products for later use. The pork is more useful by being held from periods of relative plenty to periods of relative scarcity. Time utility is added to the product. Grain elevator and warehouse operators and even the previously mentioned supermarket operator through his inventory holdings add time utility to products.

When the Iowa hogs are shipped to the terminal markets they probably are consigned to a commission man. This commission man seeks out a packer who needs the hogs and helps transfer the hogs from the farmer to the packer. A meat wholesaler facilitates the movement of meat to the retailer for distribution to the final consumers. These people through their efforts to transfer the product to those who could better use it add possession utility. Because of these actions the product is placed in the hands of others who can add still other utilities to it.

Most people accept the activities of the farmer and the manufacturer as being productive. They create visible changes in products. However, the other individuals who see that the product is moved through the various handlers, is sent to the needed place, and is available at the needed time also are productive. All of their activities are necessary to produce the final utility that the pork has for the New York housewife in feeding her family. So those engaged in the marketing process, too, are producers in the sense that they add usefulness or utility. To argue which group is more important is rather senseless. Both groups, the producers of raw products and the marketing agencies, are necessary to the creation of the final products for consumption. Both create something useful for which society will pay a price. Both groups are productive in the real sense of the word. Confusion arises largely because of the different form of the output which stems from their activity. It is common practice to reserve the term "producer" for those

who are primarily engaged in the creation of form utility. We, too, will follow this practice. This, of course, does not mean that the other groups are not productive.

*Growth of Marketing*

Marketing has developed in importance and complexity as specialization of activities has increasingly separated producers of goods from the potential consumers of those goods. The early pioneers of our country did not have to concern themselves with marketing problems. Each family grew its own food and fiber and built its own shelter. Producers and consumers, if not actually the same individuals, lived next door to each other.

Very early in the development of any community, however, people realized that some were better adapted to certain kinds of activities than others. Thus, they specialized in their work. This specialization increased the output of goods but it also broke down the self-sufficiency of the family unit. As different people specialized in different activities, methods had to be devised to exchange the surplus production for other desired goods which other specialized workers produced. Here, then, was the beginning of the marketing task and the group of people who specialized in its performance.

Another aspect of specialization is the growth of urban areas. With the disappearance of the necessity of a man to produce all his basic needs, he is able to leave the land and congregate in larger groups. Here his work may be carried on more efficiently, and the remaining people on the farms can more efficiently produce his food and fiber. Of course, this increasing urbanization further complicates the task of those engaged in the marketing process.

One of the limiting factors to the urbanization of our country has been the development of adequate transportation and communication facilities. Throughout most of our early history, one of the pressing agricultural marketing problems was that of providing adequate transportation facilities at a reasonable cost to move the increasing output of our farms to the consumers in our growing cities. Here we find an early interest of government in helping the marketing system function adequately. First turnpikes, then canals, and then railroads were subsidized through government help. This public concern has continued even to the present day as various governmental units have actively pushed both highway and air transport development.

Marketing and mass production techniques have moved hand in hand. A complex and costly marketing machinery is not necessary in situations where the volume of production is limited. On the other hand, assembly line mass production is not feasible until the marketing machinery opens

the doors to the broad mass market. Many people have viewed with alarm the impersonal relationships of our huge factories, the growing proportion of our population living in cities, and the increasing numbers who are engaged in the marketing trades and services. Such developments, however, are usually the marks of the more productive countries with increasing standards of living. It is the countries which are hovering near the subsistence levels of living which have a relatively small proportion of their people engaged in the job of marketing.

Table 1 shows the proportion of our working population employed in the various areas. In 1950 over half were engaged in lines other than manufacturing and in the working of our land and natural resources. This was a substantially larger proportion of our people than were so occupied fifty years ago. As one views this fifty-year period, certainly he cannot conclude we are now poorer in the good things of life. We have many problems, to be sure! But certainly we cannot conclude that this increased portion of our people working in the trades and services has been associated with a declining standard of living.

TABLE 1. *Employment of People in the United States*

| | 1900 | 1950 |
|---|---|---|
| OCCUPATION OR INDUSTRY | APPROXIMATE PERCENT OF TOTAL GAINFULLY EMPLOYED | |
| Manufacturing | 27 | 32 |
| Trade, transportation, public utilities | 19 | 34 |
| Domestic, professional, public service | 15 | 20 |
| Forestry and mining | 2 | 2 |
| Agriculture | 37 | 12 |

SOURCE: U. S. Census (differences in 1900 and 1950 data permit only approximations).

## *Marketing Defined*

As we have seen, marketing is essentially the production of time, place, and possession utilities. With this in mind, then, marketing can be defined as *the performance of business activities that direct the flow of goods and services from the producer to the consumer so as to reach the consumer at the time, place, and in the form he desires at a price he is willing to pay.* In a society organized on a competitive framework such as ours, the final consumer is the ultimate director of the process. The end product of all productive processes is consumption. Each individual person who is engaged in marketing is interested in maximizing his own individual gain. However, in a very real sense in the long run, he who serves the consumer best profits most.

The principal concept of the American marketing system is that of consumer direction. The consumer is allowed the freedom to allocate his income among various goods and services as he sees fit. Production and marketing patterns will respond to consumer wishes. Some segments of the production machinery respond slowly and sluggishly to consumer desires. Other parts are quite sensitive and respond quickly. But all successful segments in time do respond in some degree in a system which is built upon the freedom of people to enter or leave an enterprise and the freedom of consumer choice.

This leading role of the consumer does not mean that all passively bend to the whim of the consumer. Not at all! A dynamic society means change. Much of the effort of the marketing machinery is directed toward the job of changing the consumer's mind. Though much homage is paid to "Mrs. Consumer" as making the final decision, every effort is made to influence that decision. The marketing function of selling assumes that consumers can be changed and new demands can be created. A company develops a new product. Is it desired by consumers? Who can say, since they have not had the opportunity to try it? Advertising and salesmanship are brought into play to persuade the consumer that she does want the new product. But when all the chips are down, the final success of the production and marketing of that product rests with the consumer's decision to buy!

The essence of marketing is the making of decisions by people. The phrase "marketing machinery" implies a mechanical and automatic operation. Such is not the case at all. Marketing is the performance of business activities. And business activities are the relationships and decisions of people. At what price should I buy or sell? Should I sell immediately or store and sell later? Should I sell on this market or on another? Should I extend credit or sell only for cash? How much should I spend on advertising? These are questions upon which information must be brought to bear and a decision made. Whether the correct decision has been made will be answered by the profit-and-loss statement. And because people are not infallible, neither will be the operating results of the market process. We shall have to conclude that our marketing machinery is not perfectly competitive and that many problems need correction. The powers of government often must also be used to assure satisfactory operation.

### *Marketing Efficiency*

Nearly all changes which are proposed are based upon the grounds of increased efficiency or lower costs. Those who oppose these changes base their opposition on the assumption that the change will decrease efficiency

or raise costs. In a great many cases, efficiency is confused with marketing costs. As we shall see when we later examine these costs in more detail, whether marketing costs are great or small gives little or no indication of the efficiency with which the marketing job is accomplished.

What is efficient marketing? First, we must again recall that the ultimate objective is to satisfy consumer wants. To a very considerable extent the consumer determines the size of the marketing bill. Efficient marketing, then, might be defined as that minimum input of various economic resources which will result in the satisfaction in goods and services which the consumer desires. Anything which reduces the costs of marketing while maintaining or increasing the desired levels of consumer satisfaction would then meet the requirements of increasing marketing efficiency. On the other hand, increased costs because of the adding of new and more costly services, if they are demanded by consumers, may also represent increased efficiency.

Marketing efficiency can be subdivided into two different categories of technological efficiency and economic efficiency. Technological efficiency is concerned with the various contributions which science and technology can make toward reducing the costs of resources necessary to accomplish a given job. A new method of storing grain is developed which will reduce waste and quality deterioration. An improved method of crating is developed which will reduce both weight and damage in transportation. A new method of doing a job which reduces the labor required is worked out. These are merely examples of the many potentialities of increased efficiencies possible in the technological phases of marketing.

Economic efficiency is concerned with maintaining the competitive aspects of marketing. The best measure of the satisfaction output is probably what consumers will pay in the market place. But the reliability of this measuring stick is dependent upon two conditions. One, the consumer must be provided with alternatives from which she can choose. And two, the price tags on the choices must adequately reflect the costs involved. Improvements in this area are concerned with the policing and control of monopoly powers and the ethics of business operations. This is the area of marketing policy, since many times in our modern society it seems that a compromise must be reached between the areas of maximum technological efficiency and maximum economic efficiency. Such might be the case, for example, where there are increasing opportunities for increasing technological efficiency as the size of the firm gets larger and larger. But as the firm gets larger, some of the other competitive firms may be forced out of the field. Such actions may restrict the consumer's freedom to choose among alternatives as well as reduce the effectiveness of the price system.

It is not the purpose of those concerned with improving the performance of marketing to dictate what should be done. Rather, their purpose is to help find ways by which the job desired by consumers can be done with minimum economic waste. For example, milk can be obtained either from the route man at the doorstep or at the grocery store. Suppose it can be shown that in terms of dollars it would cost much less to sell only at the grocery store. However, what if the consumer wanted home delivery and were willing to pay the extra cost? Under the guise of increased efficiency should it be recommended that home delivery be abolished? Obviously, the consumer should be provided with both methods of delivery using the best combination of resources which technology can provide at prices which reflect costs. Then the consumer can "vote" in the market place for her choice of which way or ways she desires the marketing machinery to do the job. To abolish one and reduce consumer satisfaction certainly cannot be considered as increasing marketing efficiency.

## HISTORICAL BENCH MARKS IN AGRICULTURAL MARKETING

The history of the growth and development of agricultural marketing is a rich and exciting one. Only a broad, sweeping picture can be presented here. But the study of marketing history serves a very useful purpose. Knowing the marketing problems confronted by our grandfathers and great-grandfathers will help prevent us from believing that our current problems are the only difficult ones which have ever begged solutions. The study of past developments also helps emphasize that changes are continually underway. New developments from many different sources always have challenged the existing marketing organization to adapt or die.

Up through the end of the first half of the nineteenth century the pattern was one of small industry with transportation and communication and other marketing problems of a largely local nature. Tobacco, as one of our first surplus crops, presented one of the earliest marketing problems. In seeking solutions, colonial governments and growers tried price controls, production regulations, and struggled with grading problems. Colonial flour milling also had problems of rate fixing, monopoly, and product adulteration.

However, immediately following the Civil War, a whole new set of problems developed as the foundations were laid for the modern nationwide commercial marketing system. Agricultural production grew tremendously with the opening of new western lands. Land in farms jumped from about 294 million acres in 1850 to 536 million acres in 1880. The number

of farms increased from about 1.5 millions to 4 millions during the same period. Outlets for this potential production bonanza had to be found in both our own growing cities and in foreign countries.

About this time many of the large food industries were established. In 1865, the Union Stockyards at Chicago were formed and soon were the largest in the world. The Chicago Board of Trade was founded in 1848 and quickly developed into the nation's leading grain market. By 1870, ice was being used to preserve meat, and by 1880 the use of the refrigerated railroad car made the large national packers possible. In 1870, there were only a few flour mills at Minneapolis. By the late 1880's, Minneapolis was the milling center of the country, and the pattern of organization for the modern giant milling and grain corporations was established. With the introduction of tin cans and other canning equipment in 1880, large-scale canning of fruits and vegetables got underway. The development of cigarette-making machines in the 1880's helped make possible the growth of huge companies in the tobacco industry.

While these changes were occurring, transportation also expanded tremendously. During the decade of the 1870's, the mileage of railroads almost doubled. The two coasts were joined and transcontinental shipments became possible. Telegraph communications were rapidly expanded. Extensive highway development, however, was to await the automobile.

This was a turbulent period. The extraordinary expansion of the farm production plant made suddenly available vast amounts of agricultural raw materials. The many technological developments made possible the rapid growth of a great number of processing firms. The marketing system was put under great pressures to move this productive capacity into the hands of consumers. The rapid growth of the food processing firms and their search for outlets led to cries of monopoly and unethical practices. To this situation was added a severe agricultural price depression during much of the latter part of the century.

Farmers organized to protest these situations. Railroads were bitterly attacked for charging exorbitant and unfair rates. In 1889, one of the farm organizations, the Farmer's Alliance, demanded government ownership of the means of communication and transportation in order to correct alleged abuses. Bitter attacks were made on the alleged evils of the middlemen. Congressional investigations of the practices of the meat packing and other companies were instigated. Demands were made for all kinds of corrective and regulative measures. The immediate result of this agitation was federal regulatory action. The Act to Regulate Commerce which, among other things, authorized the Interstate Commerce Commission and the surveillance of interstate freight rates, was passed in 1887. In 1890, the passage

of the Sherman Act laid the basis for our antimonopoly policies and made private business activities a matter of public concern.

With an improvement in general economic conditions, the tension eased. And in the ensuing years until World War I, the marketing system was allowed time to grow up to its job. Agricultural production continued to expand, but there were no upheavals of the extent of the post-Civil War period. This period was one of changing emphasis in marketing. Previously, much of the effort of those working in agricultural marketing had been directed toward developing foreign markets for our exportable surplus. Now the emphasis was shifted toward developing the domestic outlets of our growing country. Recognition of this changing emphasis came in 1908, when the name of the Division of Foreign Markets in the USDA was changed to the Division of Production and Distribution. In 1914, Congress officially set up the Office of Markets to collect and disseminate information concerning the marketing of farm products.

After World War I, the attitude toward agricultural marketing took a still different perspective. It now appeared as if our production capacities had outrun our consumption capabilities. Throughout the twenties, many schemes were proposed to permit us to dump our excess production abroad. Domestically, however, improvement in the marketing machinery was to be the answer. Governmental blessings were given the cooperative movement as one way for more effective and orderly marketing. Such regulatory laws as the Packers and Stockyards Act and the Commodity Exchange Act were passed to prevent abusive practices by the marketing agencies. Increased marketing efficiency was the goal.

The depression decade of the 1930's further increased the troubles of moving the products of agriculture into consumption at satisfactory prices. Attention was now turned away from marketing to production. Developments in the marketing area could not solve the problem. We simply produced too much. Public attention was now directed toward perfecting various schemes which would reduce the amount of production.

With the demands of World War II, however, efforts were made to produce all that our resources would permit. After the war-time demands had receded, the marketing machinery again came in for increasing public attention and criticism. There is now widespread belief that improvements in production have outdistanced improvements in marketing. Ways have been found to make two blades of grass grow where one did before, but no way has been found effectively to market the extra blade. The feeling is that all that can be produced can be consumed at satisfactory prices if the marketing system is functioning well.

The current scene again is one of far-reaching changes in almost every

phase of marketing. The technique of quick-freezing foods may revolutionize part of the food industry as much as the successful use of tin cans did in the 1880's. More and more processing is being done by the food industry—less and less by the housewife. By 1948, more than a fourth of the total consumer food purchases was in the form of completely or partially prepared and ready-to-eat foods. The retail food industry has been drastically changed. By 1952, nearly half of the food was sold through self-service supermarkets which were only in the experimental stages before World War II. The emphasis has been on the mechanization of the distribution system in such a way as to reduce labor costs which have been proportionately very high.

If the reader will stop and think of the changes which have occurred in the decade of the 1940's, he must conclude that we are again experiencing revolutionary changes. The increasing concentration of population in the urban areas and the increasing specialization of production have put a still greater premium on a smooth-working and efficient marketing system. Improved transportation and communication systems have changed most marketing problems from ones of local or regional concern to those national in scope. In 1946, Congress officially gave recognition to this new emphasis on marketing when it passed the Research and Marketing Act. Under this Act, additional funds for expanding research into all phases of marketing were authorized. Once again the American people have thrown the challenge to those engaged in marketing.

## THE FARMER AND MARKETING

The farmer and those engaged in advising and helping him have a tremendous stake in an efficient marketing system. The income from the raw products which farmers sell is a function of the smooth operation of the marketing system. As one author has phrased it, the effective and efficient marketing system from the farmers' viewpoint is one which will induce the production of those products and quantities which, when sold to consumers, will result in maximum returns after the deduction of minimum marketing charges and farm production costs.[1]

A knowledge of marketing and its problems will help farmers make needed business decisions. Some of these decisions are as follows:

1. What to produce. For example, some fruit varieties are more desired than others. Some hog types will produce a more consumer-desired pork than others. Farmers who know these market desires can adjust their production accordingly.

[1] F. L. Thomsen, *Agricultural Marketing* (New York, McGraw-Hill, 1951), p. 4.

2. How to prepare products for markets. The degree of maturity at harvest often influences the value of products. The kind of harvesting equipment used may have an effect on the damage and spoilage of some products. Certain packing practices may influence the amount of transportation damage. Following such practices will permit the farmer to reduce part of the marketing costs.
3. When to sell or buy. Different products have different high and low periods of prices throughout the year. Breeding and production patterns may be changed to take advantage of these price patterns. Storage practices may be reviewed in light of cost and return possibilities. Costs of things that farmers buy may be reduced by knowing whether there is a usual period of low prices.
4. Where to sell or buy. Many alternatives are usually available. Which outlet will help maximize returns? What factors should be taken into account in making the decision?

Also, familiarity with marketing may help farmers make wiser decisions as members of a group. Should a cooperative be formed to help do a marketing job? What part should government play in control and regulation? What position should be taken toward a new method or development? A broad knowledge of the objectives, organization, and operation of marketing is needed to judge wisely the proper actions which need to be taken.

These are just a few of the contributions which a knowledge of marketing can make toward more profitable farming. The objective of production from the producer's standpoint is profit. And profit is not realized until the product is sold. Coordination of those activities which occur within as well as those which occur outside the farm fence is necessary for maximum returns.

## THE APPROACH OF THIS BOOK

In the main, the following chapters will be devoted to a discussion of the practices and problems encountered in the marketing of agricultural food products. Part of the chapters address themselves to the appreciation of the general problem, for only when the whole picture is understood can the parts have meaning. The commodity chapters are limited largely to a description of the marketing activities and problems which appear to have the most immediate bearing on the farmers. Discussions of the processing industries and food wholesaling are dealt with separately, for it must be recognized that the marketing of farm products is not completed until the raw product is processed and in the hands of the final consumer.

This is not a complete book on agricultural marketing. No text should

claim to be. Rather, it is hoped that the issues discussed will furnish a starting point for understanding the many problems peculiar to particular regions or special interests. With this understanding, better farm and public decisions can be made. Many tables and charts are used on the theory that a close study of these will tell more than many printed pages. These deserve careful study. Many such books as this are boring reading indeed. It is hoped that this book will keep boredom to a minimum and that on the whole you will find it an interesting excursion into a very useful and important field.

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CHAPTER TWO

# *Analyzing Marketing Problems*

The difference between an orderly closet in which one can find what is desired with a minimum of effort and a disorderly one in which nothing can be easily found can often be traced to an adequate system of hooks, hangers, and shelves. The study of a complex marketing problem can be as frustrating as looking for a special item in the disorderly closet unless a system of hooks and shelves is devised on which we can organize our thoughts and ideas. It is to these organization devices that we now give our attention.

## MAJOR MARKETING PROCESSES

All marketing activities can be classified into three major processes. These are the processes of concentration, equalization, and dispersion.

The process of concentration is essentially one of assembly and procurement. The raw materials produced on the nation's farms are assembled by local agencies and sent forward to our great wholesale centers near the consumption areas. Food processors may secure large amounts of the desired product from these concentration points.

The equalization process consists of those activities which match the flow of production with the rate of consumption. Many products are produced seasonally but consumed year round. Processors, wholesalers, and retailers must acquire inventory stocks at the right places so that they always can be ready to meet the demands of their customers. Such holding operations are part of the major process of equalization.

Dispersion in a sense is the counterpart of concentration. Where concentration was the process of assembling goods into large units at central points, dispersion is the process of breaking down these large units and distributing them to the various consumers. Products must be channeled

out through the many wholesalers and retailers into the hands of consumers. These activities make up the process of dispersion.

Perhaps the nature of these processes will be clearer if we follow a commodity from its initial production through to its final consumption. For example, let us examine these processes as they occur in the marketing of wheat. Wheat is produced in amounts ranging from a few bushels to thousands of bushels on thousands of farms scattered throughout the country. Farmers sell their wheat to country elevators. The elevators usually wait until they have accumulated considerable volume and then ship the wheat forward by the carload to larger terminal elevators, which are capable of holding hundreds of thousand of bushels, located in our larger milling centers. This has been the concentration process—wheat has gradually been assembled from widely scattered production points into large holdings centrally located.

It will now remain in storage until it is needed by millers. Or even after milling, the flour may be stored for a short time. These activities are part of the equalization process. Then the flour may be shipped in varying quantities to bakers. Here, after baking, the bread will be sold to retailers. These retailers will then sell the bread, loaf by loaf, to consumers. This gradual breaking down into smaller and smaller units is dispersion. However, during this dispersion process equalization also was continuing as some flour was probably held in stock by bakers and to a limited extent so was some bread.

## APPROACHES TO MARKETING PROBLEMS

There are three major approaches to the analysis of marketing problems. These are the functional approach, the institutional approach, and the commodity approach. All three are merely ways of breaking down a complex marketing problem into its parts so that it can be better understood.

### *The Functional Approach*

One method of classifying the activities which occur in the marketing processes is to break the processes down into *functions*. A marketing function may be defined as a major specialized activity performed in accomplishing the marketing processes of concentration, equalization, and dispersion.[1]

[1] The origination of the functional idea is usually credited to A. W. Shaw in his article, "Some Problems of Market Distribution," *Quarterly Journal of Economics*, August, 1912, pp. 703–765. This article is also given in a condensed form in *Changing Perspectives in Marketing* (Urbana, University of Illinois Press, 1951), p. 32.

Any listing of functions must be recognized as an arbitrary one. Authors list from as few as eight to as many as three or four times that number. Each composer of a list, of course, believes his list best. Others disagree and propose a list of their own.[2] We are looking for hooks and shelves on which to arrange our ideas. The exact terminology of the list is not of great importance as long as the scope of the individual functions is understood. We shall follow a fairly widely accepted classification of functions as follows:

A. Exchange Functions
   1. Buying (assembling)
   2. Selling
B. Physical Functions
   3. Storage
   4. Transportation
C. Facilitating Functions
   5. Standardization
   6. Financing
   7. Risk-bearing
   8. Market information

The exchange functions are those activities which are involved in the transfer of title to goods. They represent the point at which the study of price determination enters into the study of marketing. These functions are never performed in our economy without a judgment of value, usually expressed at least partially as a price, being placed on the goods. Both the buying and selling functions have as their primary objective the negotiation of favorable terms of exchange.

The *buying* function is largely one of seeking out the sources of supply, assembling of products, and the activities which are associated with purchase. This can either be the assembling of the raw products from the production areas or the assembling of finished products into the hands of other middlemen in order to meet the demands of the ultimate consumer.

The *selling* function must be broadly interpreted. It is more than merely passively accepting the price offered. In this function can be grouped all of the various activities which sometimes are called merchandising. Most of the physical arrangements of display of goods are grouped here. Advertising and other promotional devices to influence or create demands are also part of the selling function. The decision as to the proper unit of sale,

[2] See, for example: P. D. Converse and H. W. Huegy, *The Elements of Marketing*, 3rd ed. (New York, Prentice-Hall, 1946), p. 56; E. D. McGurry, "Some Functions of Marketing Reconsidered," *Theory in Marketing*, ed. R. Cox and W. Alderson (Chicago, Richard D. Irwin, 1950), pp. 263–279.

the proper packages, the best marketing channel, the proper time and place to approach potential buyers—all are decisions which can be included in the selling function. Here also might fall the market research activities which are undertaken primarily to ascertain where an article can be sold and how much will be taken.

The physical functions are those activities which involve handling and movement of the actual commodity itself. They are involved in solving the problems of when and where in marketing.

The *storage* function is primarily concerned with making goods available at the desired time. It may be the activities of elevators in holding large quantities of raw materials until they are needed for further processing. It may be the holding of supplies of finished goods as the inventories of processors, wholesalers, and retailers.

The *transportation* function is primarily concerned with making goods available at the proper place. Adequate performance of this function requires the weighing of alternatives of routes and types of transportation as they might affect transportation costs. It also includes the activities involved in preparation for shipment such as crating and loading.

The facilitating functions are those which make possible the smooth performance of the exchange and physical functions. These activities are not directly involved in either the exchange of title or in the physical handling of products. However, without them the modern marketing system would not be possible. They might aptly be called the grease that makes the wheels of the marketing machine go round.

The *standardization* function is the establishment and maintenance of uniform measurements. These may be measurements of both quality and quantity. This function simplifies buying and selling, since it makes the sale by sample and description possible. It, therefore, is one of the activities which makes possible mass selling, which is so important to a complex economy. Effective standardization is basic to an efficient pricing process. A consumer-directed system assumes that the consumer will make his wants known largely through price differentials. These differentials must then be passed back through the marketing channel so that marketing agencies and producers can know what is wanted. Only if a commodity is traded in well-defined units of quality and quantity can a price quotation do this job effectively. Standardization also simplifies the concentration process, since it permits the grouping of similar lots of commodities early in movement from the producing points. Besides their establishment, the use of standards must be policed. Such activities as quality control in processing plants and inspections to maintain the standards in the marketing channel can be considered part of this function.

The *financing* function is the advancing of money to carry on the various aspects of marketing. To the extent that there is a delay between the time of the first sale of raw products and the sale of finished goods to the ultimate consumer, capital is tied up in the operation. Anywhere that storage or delay takes place, someone must finance the holding of goods. The period may be one of a year or more, as in the operations of the canning industries, or a relatively short time as in the marketing of perishables. Financing may take the easily recognizable form of advances from various lending agencies or the more subtle form of tying up the owner's capital resources. In either instance, it is a necessary activity in modern marketing.

The *risk-bearing* function is the accepting of the posibility of loss in the marketing of a product. These risks can be largely classified into two broad classifications—physical risks and market risks. The physical risks are those which occur from destruction or deterioration of the product itself by fire, accident, wind, earthquakes, cold, and heat. Market risks are those which occur because of the changes in value of a product as it is marketed. An unfavorable movement in prices might result in high inventory losses. A change in consumer taste might reduce the desirability of the product. A change in the operation of competitors might result in a loss of customers. All of these risks in varying degrees must be borne in the marketing of a product. Risk-bearing may take a more conventional form such as the use of insurance companies in the case of physical risks or the utilization of future exchanges in the case of price risks. Or, as is often true, the entrepreneur himself may bear the risk without the aid of any of these specialized agencies. The function of risk-bearing is often confused with the function of finance. Their differences can be kept clear, however, if it is remembered that the need for financing arises because of the time lag between the purchase and sale of products while the need for risk-bearing arises because of the possibility of loss during the holding period.

The *market information* function is the job of collecting, interpreting, and disseminating the large variety of data which are necessary to the smooth operation of the marketing processes. Efficient marketing cannot operate in an information vacuum. An effective pricing mechanism is dependent on well-informed buyers and sellers. Successful decisions of how much to pay for commodities or what kind of pricing policy to use in their sale require that a large amount of market knowledge be assembled for study. Adequate storage programs, an efficient transportation service, and an adequate standardization program all depend to a considerable extent on good information. Much of the market research which is carried on to evaluate the possible alternative marketing channels which may be used, the different ways of performing other functions, the market potentialities

for new products, may be classified as part of the broad function of market information. As with other functions, this function may be performed by those who specialize in its performance. On the other hand, everyone in the marketing structure who buys and sells products evaluates available market data and therefore performs this function to some degree.

USE OF THE FUNCTIONAL APPROACH The functional approach considers the jobs which must be done; it is not concerned with the agency which performs them. Some marketing agencies specialize in performing specific functions. For example, cold storage warehouses are operated to perform the storage function. A potato broker may specialize in the selling and market information functions. On the other hand, some marketing agencies may perform all of the functions to some degree. The retailer is a good example of this latter group.

Analyzing the functions of various middlemen is particularly helpful in evaluating marketing costs. Retailing is usually much more costly than wholesaling. The functional approach, however, points up the greater complexity of retailing by focusing attention on the increased extent to which the retailer must perform his various functions. The use of the functional concepts also aids in comparing the costs of two similar middlemen. Cost comparisons are meaningful only when they are related to the job done. Retailer "A" may operate at lower costs than retailer "B," but does retailer "A" perform the same functions as "B"? Perhaps "A" is a cash-and-carry merchant while "B" extends credit and delivers. As such, "A" probably performs considerably less of the functions of financing, risk-bearing, and transportation than "B."

The functional approach is also useful in understanding the difference in marketing costs of various commodities. For example, a perishable product is often more costly to market than one which is less perishable. Much of this difference may be due to the greater difficulty in the performance of the transportation, storage, and risk-bearing functions.

But probably of greater importance, the breaking down of a complex marketing task into its component functions greatly aids in efforts to improve the performance of the marketing machinery. Again in reference to our retailer, perhaps retailer "B" is losing money even though other retailers having similar operations are not. A function-by-function study of "B's" business might show that the cost of its credit function is unduly high because of unpaid accounts. Or a careful analysis of his selling function may show he has not kept up with new methods in merchandising his products and thus is losing out to his competitors.

Marketing functions are activities which must be performed in market-

ing. Functions cannot be eliminated. Their performance may be simplified. The duplication of their performance can be corrected. In any case, changes may be made toward performing functions with greater efficiency. Keeping this idea in mind will help in evaluating the various schemes for improving marketing by "eliminating middlemen." The man may be eliminated, but not the functions which he performs. These may be done better and duplication reduced, but the various functional jobs must still be done by someone.

The reader can check his grasp of the above ideas if he will pause now and try to put them into practice. Choose a familiar commodity and enumerate the various functions which are performed by the different agencies in moving the commodity into consumption. In listing, do not forget the marketing functions which the farmer himself might perform.

*The Institutional Approach*

Another method of analysis is to study the various agencies and business structures which perform the marketing processes. Where the functional approach attempts to answer the "what" in the question of "who does what," the institutional approach to marketing problems focuses attention on the "who." Marketing institutions are the wide variety of business organizations which have developed to operate the marketing machinery. The institutional approach considers the nature and character of the various middlemen and related agencies and also the arrangement and organization of the marketing machinery. In this approach the human element receives primary emphasis.

MIDDLEMEN OF THE MARKETING PROCESSES Middlemen are those individuals or business concerns which specialize in performing the various marketing functions involved in the purchase and sale of goods as they are moved from producers to consumers. Our concern here is with the place in the marketing processes which the middlemen occupy. There is no limitation as to the way in which they have organized for doing business. They may operate as individual proprietors, partnerships, or cooperative or noncooperative corporations. The middlemen of particular interest in food marketing can be classified as follows:[3]

A. Merchant Middlemen
   1. Retailers
   2. Wholesalers

[3] The definitions that follow are substantially those as reported by the American Marketing Association, Definitions Committee, *Journal of Marketing*, October, 1948, p. 211.

B. Agent Middlemen
   1. Brokers
   2. Commission men
C. Speculative Middlemen
D. Facilitative Organizations

*Merchant middlemen* take title to, and therefore own, the products they handle. They buy and sell for their own gain. The *retailer* buys products for resale directly to the ultimate consumer of the goods. He is the producers' personal representative to the consumer. As such, his job is very complex. From the functional viewpoint, the retailer may perform all of the marketing functions. This group of middlemen, consisting of about 500,000 units, is the most numerous of the marketing agencies.

The *wholesaler* sells to retailers, other wholesalers, and industrial users, but does not sell in significant amounts to ultimate consumers. Wholesalers make up a highly heterogeneous group of varying sizes and characteristics. One of the more numerous groups of wholesalers (about 18,000 in 1948) are the local buyers or country assemblers who buy goods in the producing area directly from farmers and ship the products forward to the larger cities where they are sold to other wholesalers and processors. In this group are such agencies as grain elevators, poultry and egg buyers, and local livestock buyers. Another group of wholesalers is located in the larger urban centers. These may be "full-line" wholesalers who handle many different products or those which specialize in handling a limited number of products. They may be cash-and-carry wholesalers or service wholesalers who will extend credit and offer delivery and other services. Such terms as "jobbers" and "car-lot receivers" are often used synonymously with "wholesalers." In 1948, there were approximately 31,000 merchant wholesalers of agricultural commodities (apart from country assemblers) and grocery products.

*Agent middlemen*, as the name implies, act only as representatives of their clients. They do not take title to, and therefore do not own, the products they handle. While merchant wholesalers and retailers secure their incomes from a margin between the buying and selling prices, agent middlemen receive their incomes in the form of fees and commissions. Agent middlemen in reality sell services to their principals, not physical goods to customers. In 1948, there were approximately 24,000 which could be classified as agent middlemen. In many instances, the principal stock in trade of the agent middlemen is market knowledge and "know-how" which he uses in bringing the buyer and seller together. Their services are often retained by a buyer or seller of goods who feels that he does not have the knowledge or opportunity to bargain effectively for himself.

Though the names may differ somewhat, agent middlemen can be

broken down into two major groups, commission men and brokers. The difference between these two types of agent middlemen is largely one of degree. The *commission man* is usually granted broad powers by those who consign goods to him. He normally takes over the physical handling of the product, arranges for the terms of sale, collects, deducts his fee, and remits the balance to his principal. The *broker*, on the other hand, usually does not have physical control of the product. He usually follows the directions of his principal closely and has less discretionary power in price negotiations than commission men. In agriculture, livestock commission firms and grain brokers are good examples of these two classifications of agent middlemen.

*Speculative middlemen* are those who take title to products with the major purpose of profiting from price movements. All merchant middlemen, of course, speculate in the sense that they must face uncertain conditions. Usually, however, wholesalers and retailers attempt to secure their incomes through handling and merchandising their products and to hold the uncertain aspects to a minimum. Speculative middlemen seek out and specialize in taking these risks and usually do a minimum of handling and merchandising. Several names are given to these middlemen such as "traders," "scalpers," and "spreaders." They often attempt to earn their profits from the short-run fluctuations in prices. Purchases and sales are usually made at the same level in the marketing channel. For example, the livestock speculator may buy hogs today and sell them back either today or tomorrow in the same yards. The grain scalper may buy and sell grain futures several times within the trading day. Speculative middlemen often perform a very important job as a competitive force in the maintenance of an adequate pricing structure.

*Facilitative organizations* aid the various middlemen in performing their tasks. Such organizations do not, as a general rule, directly participate in marketing processes either as merchants or agents. One group of these organizations furnishes the physical facilities for the handling of products or for the bringing of buyers and sellers together. They take no direct part in the buying and selling of the products themselves. However, they establish the "rules of the game" which must be followed by the trading middlemen, such as hours of trading and terms of sale. They may also aid in grading, arranging and transmitting payment, and the like. They receive their incomes from fees and assessments from those who use their facilities. Examples of this group are the stockyard companies, grain exchanges, and fruit auctions.

Another group of organizations falling in this general category is the trade associations. The primary purpose of a large majority of these organizations is to gather, evaluate, and disseminate information of value to a

particular group or trade. They may carry on research of mutual interest. In many cases they also may act as unofficial policemen in preventing practices which the trade considers unfair or unethical. Though not active in the buying and selling of goods, these organizations may often have far-reaching influence on the nature of marketing.

*Food processors,* though not included in our list of marketing middlemen, cannot be omitted from consideration. Apart from their manufacturing activities which one might classify as being outside the boundaries of marketing, food processors do take an active part in marketing. Some, such as meat packers, flour millers, and fruit and vegetable canners often act as their own buying agents in the producing areas. And on the other hand, it is increasingly common for this group to undertake the wholesaling of their finished products to retailers. Too, many of the processors through their advertising sales work attempt to reach the ultimate consumer. So the processing in itself is only part of the activities of food manufacturers. They are also important institutions in marketing. As we shall see, the production aspects and changes of the farm production unit itself have important bearing on marketing. Similarly, the technology of food processing and its changes have important influences upon the marketing processes. The advent of frozen foods, for example, has had important effects on both the performance of marketing functions and the institutions which perform them. It will be recalled in this connection that the perfection of refrigerator cars had important and far-reaching effects on the organization and operation of the meat packing industry.

ORGANIZATION OF THE MARKETING MACHINERY The above discussion of the place of the food processor has brought out one of the more important aspects of the organization of marketing—that of the degree of *integration.* As has been pointed out, individual functions may be performed by specialized individuals, or one individual may perform several. Also in the operations of marketing institutions, one firm, such as a food processor, may undertake the work of several middlemen. This combining or grouping together of various agencies and activities is known as integration.

There are two basic kinds of integration. *Vertical* integration occurs when a firm combines activities which are unlike those it is currently performing. Such integration is illustrated by the meat packer who decides to reach backward toward the producer and set up his own livestock buying points in the countryside and forward toward the consumer as he undertakes to wholesale meat to retailers. *Horizontal* integration occurs when a firm absorbs other firms which are performing similar activities. The de-

velopment of the line elevators in which many individual elevators are operated by one management as a chain is an example of horizontal integration. A large national grocery chain organization is illustrative of both types of integration. Many retail units are brought together by horizontal integration. The chain may also vertically integrate by operating food processing activities such as canneries and its own wholesaling set-up. Integration offers opportunities to increase efficiency. On the other hand, it also poses many policy problems in the area of pricing and competitive practices.

The levels of the marketing channels in which middlemen operate also are institutional considerations. The classification of local, wholesale, and retail markets is often used as an institutional framework.

The *local* market refers largely to the agencies operating in the producing area. These agencies buy products from farmers and in turn ship them to the larger wholesale centers. To many farmers these firms represent the entire marketing process. However, it should be clear by now that the local market is usually just the beginning.

*Wholesale* markets usually develop in the relatively large consuming centers. It is to these middlemen that the local markets ship their goods. In the larger wholesale centers, middlemen specializing in different products often tend to group themselves in different areas of the city. In such cities as Chicago and New York, we find poultry streets, fruit and vegetable streets, garment trade areas, livestock marketing and packing areas, and so forth. Such grouping often offers advantages to both buyers and sellers of the particular commodity. On the other hand, grouping often furnishes some of the real problems in marketing improvement. Many such areas take on all the aspects of the union closed shop. Newcomers find contacts very difficult to make. Such areas also, with the passing of time, may become too poorly equipped and located to conduct business efficiently.

*Retail* markets, of course, are familiar to all of us. Originally such middlemen tended to group themselves in the "downtown area." In recent years, there has been the decentralizing influence of the suburban shopping center. In food retailing, the large supermarket located by itself has been the newest development.

MARKETING CHANNELS The various agencies which handle a commodity as it moves through the major marketing processes make up the marketing channel. Flow charts are often used to show the relative amounts of a commodity which are handled by each of the marketing agencies in the marketing channel. Such presentations of the paths that are used in marketing a commodity are often valuable in appraising the complexity of

the marketing machine and the relative importance of its various parts. Such data are presented in the various commodity chapters, since a grasp of the basic movement pattern is one of the stepping stones toward better understanding of marketing problems.

National flow charts for a commodity must be used only for what they are—a generalized picture of the average channel at a given time. Marketing channels of a commodity may also change over a period of time. New technological developments, new products, and changing market institutions are examples of many factors which may cause the old pattern to change. The widespread ownership of trucks has been one of the factors which have changed livestock marketing channels. The development of the corporate grocery chain store along with its affiliated wholesaling and processing agencies has been instrumental in changing old-established channels for both fresh and canned fruits and vegetables. The channel of a commodity may be considerably different in one region than in another. The channel may also vary seasonally. If one is seeking answers to a specific problem, these differences may be far more important than the aggregate average.

USE OF THE INSTITUTIONAL APPROACH The recognition of the various kinds of marketing organizations and the way in which they organize themselves furnishes another useful tool in analyzing marketing problems. Very often, the why of certain marketing practices must be answered in terms of the characteristics of who performed it. Such analysis has the advantage of preventing the personal aspects of marketing from being ignored.

Attitudes toward change or improvement must often be examined in the light of the characteristics of the various marketing institutions. One of the greatest hazards to market improvement comes from institutions with large vested interests in the status quo. Marketing institutions give voice to the marketing machinery. From them develop "pressure" and "educational" groups attempting to mold public opinion. One of the cardinal rules to be followed in the analysis of any marketing controversy is first to ascertain which groups are vocal in the controversy and what they might stand to gain or lose.

### *The Commodity Approach*

Another way of approaching the analysis of the marketing processes is to study them commodity by commodity. Under this method, both the functional and institutional aspects of marketing are analyzed in detail for a particular commodity such as livestock or cotton. This approach is

an excellent way to organize and study a large amount of descriptive detail. Several chapters of this book are devoted to commodity analysis, since a great many people are interested in the marketing of a specific commodity.

Commodity analysis helps focus attention on the differences in marketing which arise because of differences in either the commodity or its production. Perishability, seasonality, and the size of the basic production unit may influence the way functions are performed and the type and organization of institutions which perform them. The separate study of a large number of commodities also will often help point up the similarity of the many marketing problems which exist. For example, a commodity-by-commodity analysis points out that retailing usually is the most costly single step in marketing. This finding helps emphasize the importance of a critical evaluation of the retailer as a middleman and the functions he performs.

In the final analysis, all three approaches—functional, institutional, and commodity—are necessary to obtain the most complete understanding of marketing. Functional analysis may have meaning only when combined with institutional and commodity analysis. Thus, it may be a simplifying procedure to think of the functions of storage or financing in the abstract. However, a complete grasp of a particular problem may not be possible until the characteristics of the various business organizations and the product itself which are specifically involved are considered.

In order to make real progress in marketing improvement we must deal with the world "as is," not as it theoretically should be. In striving for improved technical efficiency we must work with the commodity and the functions which must be carried out. In aiming at improved economic efficiency we must work with the existing business world and the people who operate its institutions.

## MARKETING PRINCIPLES

The complex problems of marketing mean that many fields of study can contribute to their solution. From economics we can utilize the large body of theory which helps explain prices and price behavior. Firm analysis, regulations of output, advantages of size and integration—all of these are problems of economics. Also from the closely allied fields of business management and cost accounting, marketing secures many of its useful tools.

From psychology we can utilize the various theories of individual behavior motivation. If marketing agencies are to influence demand successfully, the knowledge of why people act as they do is of prime importance. From sociology we can utilize much of the body of knowledge

which has been developed concerning populations, community growth and relations, and so on to answer such marketing questions as proper location and extent of trading areas.

The physical technological aspects of marketing are of great importance also. How cold should a warehouse be to store apples? What kind of wrapping is best for prepackaged meat? What causes breakdown of canned foods? How much strain must the crating for oranges be able to bear during transit? For help in these areas, marketing people must turn to the various physical sciences for aid and guidance.

Agricultural marketing and other marketing fields often have much in common. Many of the results of industrial marketing studies may find useful application in agriculture. Studies made of a problem in Illinois may have full or partial application to problems in Ohio. We must not turn up our noses just because the study does not directly apply to our region or product. As we shall see, the area of marketing study is really one of coordination of many other areas rather than an isolated and specialized area of its own.

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CHAPTER THREE

# *Consumers of Agricultural Products*

The ultimate job of those engaged in marketing is to move products into consumption. Consumption, however, is something more than a cold statistic. Consumption is accomplished by consumers who are very-much-alive human beings. This job of moving products into the hands of consumers, too, is more than a process of matching aggregate totals. The questions of where, when, and what kind are all important aspects. The total market for our agricultural production is made up of both domestic and foreign consumers. Domestic consumers take the great majority of our agricultural products. However, for some of our products, the foreign market is very important.

Consumers imply both number of people and their purchasing power. In addition there are many other factors which may influence the what, when, and where of the market for food. Among these are the geographic location of population and incomes, the degree of urbanization, and the differences which may arise from various regional, racial, and nationality backgrounds and various habits and customs. These are the principal factors to be discussed in this chapter.

## INCOMES AND FOOD EXPENDITURES

The aggregate amount of dollars spent for food moves up and down with the variations in the total incomes received by consumers. Figure 1 shows that over a long period of time covering both the depression of the thirties and the war period of the forties, consumers spent roughly about 25 percent of their disposable income for food. In the deep depression year of 1932, per capita disposable income was $381 and expenditure for food was $91—a 24 percent expenditure. In 1952, disposable income was about $1,680 and expenditure for food slightly above $400—a 27 percent expenditure. The important lesson here is that in order to obtain more total

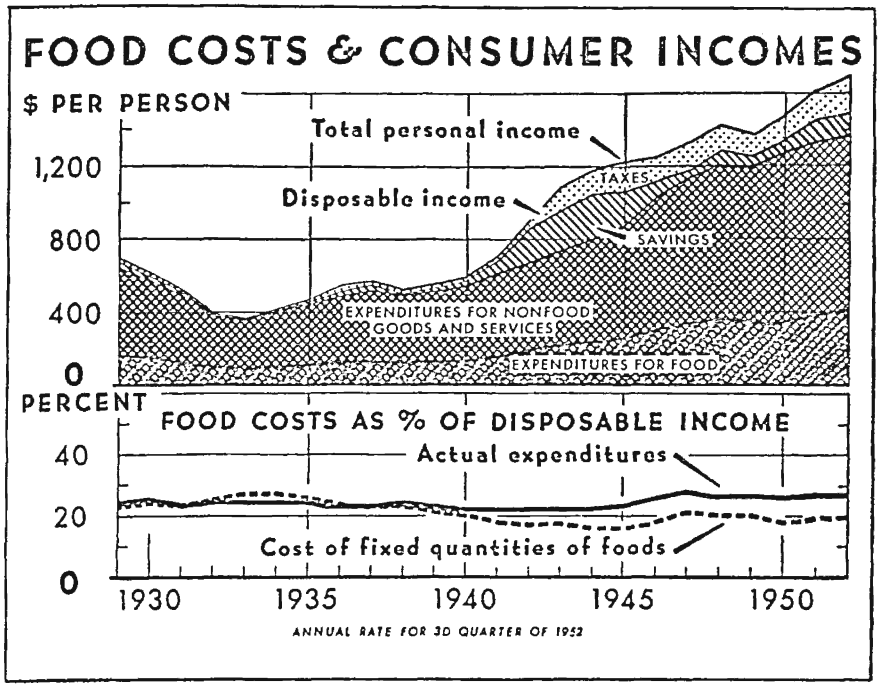


FIGURE 1. *The relationship of food expenditures to income. (Courtesy USDA.)*

dollars for agricultural products we must look largely to maintaining a high level of consumer income. This is true regardless of whether there is a large or small total volume of products to be marketed in any given year.

## POPULATION AND INCOME

### *Distribution of People and Incomes*

Where are the people? How much do they have to spend? These are two basic questions which affect the operation of the marketing machinery. Neither people nor incomes are distributed evenly throughout the United States.

The area roughly outlined by the Ohio River on the south and the Mississippi River on the west includes the great mass market for all kinds of agricultural products. In this area, which is roughly one-eighth of the total area of the country, are concentrated over two-fifths of the total population and over one-half of the total income (Tables 1A and 1B). The income per square mile of this area, which is a good measure of market potential, is well above twice that of the average of the country.

Much of the southern area of the country has above average popula-

tion, but the per capita income is low. On the other hand, though the income of the mountain regions is nearly that of the United States average, the population is so sparse that it has a very low concentration of income per square mile.

TABLE 1A. *Concentration of the Domestic Market, 1950*

| REGION | LAND AREA | POPULATION | INDIVIDUAL INCOME PAYMENTS |
|---|---|---|---|
| | PERCENT OF U. S. TOTALS | | |
| New England | 2.1 | 6.2 | 6.7 |
| Middle Atlantic | 3.4 | 20.0 | 24.0 |
| East-North Central | 8.2 | 20.2 | 22.4 |
| West-North Central | 17.2 | 9.3 | 8.9 |
| South Atlantic | 9.0 | 14.1 | 11.1 |
| East-South Central | 6.1 | 7.6 | 4.6 |
| West-South Central | 14.5 | 9.6 | 7.7 |
| Mountain | 28.8 | 3.4 | 3.2 |
| Pacific | 10.7 | 9.6 | 11.4 |
| United States | 100.0 | 100.0 | 100.0 |

TABLE 1B. *Concentration of the Domestic Market, 1950*

| REGION | POPULATION PER SQUARE MILE | INCOME PER CAPITA | INCOME PER SQUARE MILE |
|---|---|---|---|
| | PERCENT OF U. S. AVERAGE | | |
| New England | 291 | 108 | 315 |
| Mid-Atlantic | 592 | 120 | 710 |
| East-North Central | 245 | 111 | 272 |
| West-North Central | 54 | 96 | 52 |
| South Atlantic | 156 | 79 | 123 |
| East-South Central | 126 | 60 | 76 |
| West-South Central | 67 | 79 | 53 |
| Mountain | 12 | 94 | 11 |
| Pacific | 89 | 118 | 106 |
| United States * | 100 | 100 | 100 |

* Population per square mile, 50.7; income per square mile, $73,000; income per capita, $1,436.

SOURCE: From data in *Statistical Abstract of the United States*, 1951, and *Survey of Current Business*, August, 1951.

The marketing machinery must be adapted to supply the Northeast with huge quantities of all kinds and qualities of commodities. In the South it must be prepared to meet the demand for larger amounts of lower quality products. In much of the rest of the country the marketing organization must solve the problem of servicing few people scattered throughout an extensive area.

*Population Growth*

The population of the United States has grown rapidly. It almost has doubled during the first half of this century.

The fact that the country has been growing is an important one for an expanding market for agricultural products. However, in this growing process, the western regions have been growing much more rapidly than the older eastern and southern regions. The Pacific coastal area has grown phenomenally especially during the decade of the 1940's (Figure 2).

The changing population pattern means that the marketing machinery also must change. Fifty years ago, almost all of the production of the West had to look eastward for its market. Although, as we have seen, the eastern area is still the principal market area, an increasing amount of western

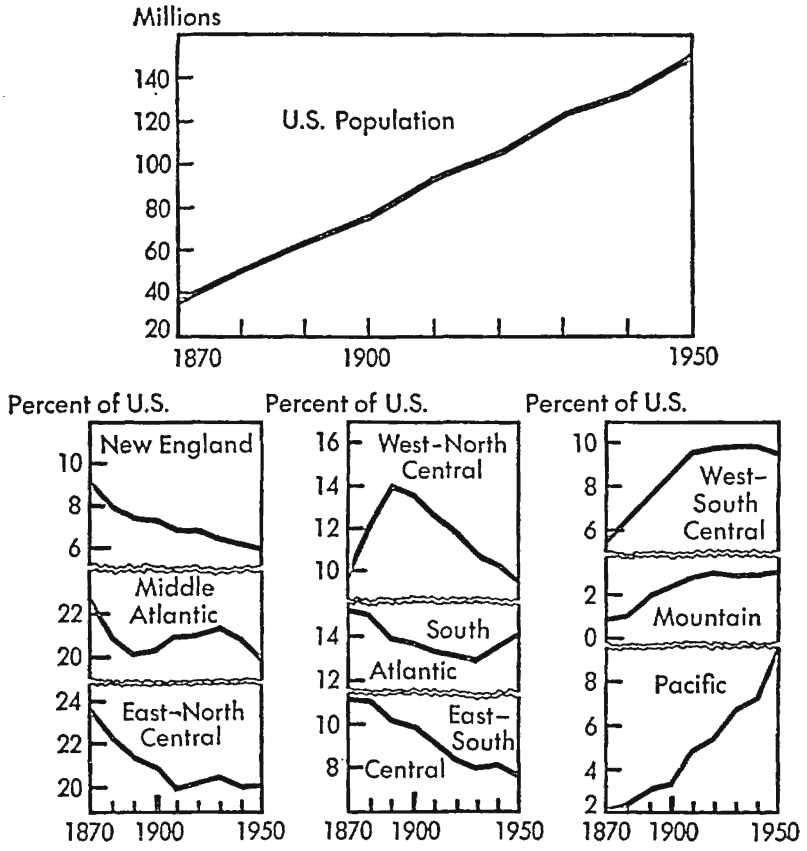


FIGURE 2. *Total United States population and proportionate distribution in different geographic regions, 1870–1950. (Source: U. S. Census.)*

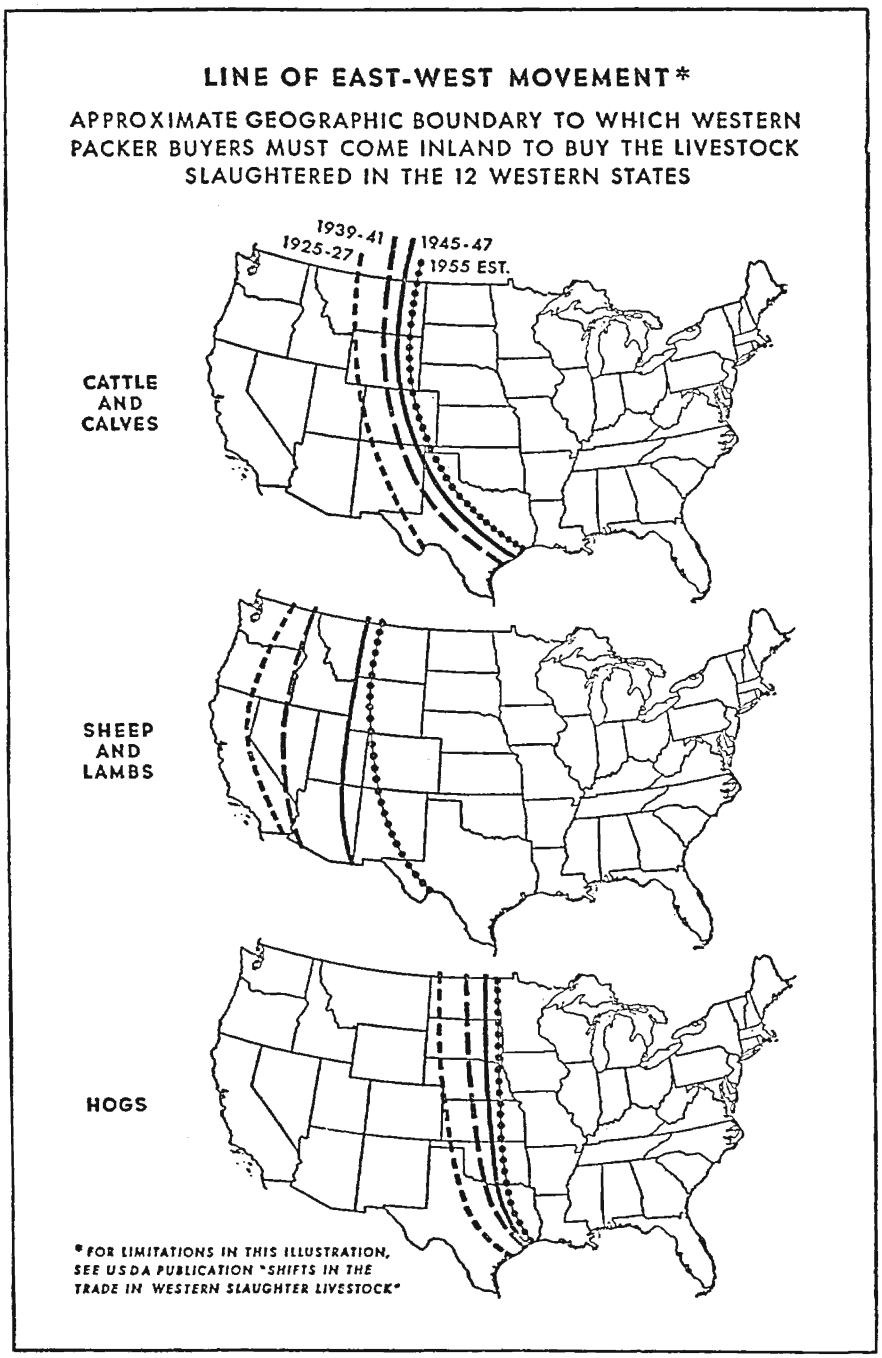
LINE OF EAST-WEST MOVEMENT*
APPROXIMATE GEOGRAPHIC BOUNDARY TO WHICH WESTERN PACKER BUYERS MUST COME INLAND TO BUY THE LIVESTOCK SLAUGHTERED IN THE 12 WESTERN STATES
1939-41
1925-27
1945-47
1955 EST.
CATTLE AND CALVES
SHEEP AND LAMBS
HOGS
*FOR LIMITATIONS IN THIS ILLUSTRATION, SEE USDA PUBLICATION "SHIFTS IN THE TRADE IN WESTERN SLAUGHTER LIVESTOCK"

FIGURE 3. *The effect of regional population changes on the production-consumption balance of livestock.* (*Courtesy* USDA.)

production can find a market nearer home. This situation is illustrated by Figure 3. With the passing of time, the lines which represent an East-West production-consumption balance for livestock have been moving eastward. In 1925 nearly all of the hogs in the corn belt moved eastward for consumption. Now considerable numbers from the western areas of the corn belt move to the West Coast.

*Growth of Urban Population*

Fewer people on the farms are responsible for producing food for an increasing off-farm population. In 1910, 35 percent of our total population lived on farms, 19 percent lived in towns of under 2,500, and 46 percent lived in towns and cities 2,500 and larger. By 1950, these percentages had changed to 16, 20, and 64 respectively. During the ten years from 1940 to 1950 the population in the larger towns and cities increased about 19 percent, in the smaller towns 33 percent, while the farm population decreased 16 percent.

More and more people are living in the largest cities. In 1910, about 17 percent of our people lived in the thirty-seven cities of 250,000 or more. By 1950, there were thirty-nine cities of this size accounting for 23 percent of our total population. In addition, the suburban areas surrounding these cities have grown at an even faster rate.

Along with this urban development have come smaller living quarters and family units. In 1950, one-sixth of the urban population lived in buildings which had five or more dwelling units; slightly over one-fourth was living in three rooms or less. In 1910, the average family consisted of 4.5 persons; in 1950, the average family had 3.6 persons.

This trend toward city living has its impact upon marketing. It has been estimated that about 22 percent of our retail food sales occurs in the metropolitan districts of over 1,000,000 people.[1] Nearly one person in every five must be supplied with food under conditions of urban congestion. The smaller urban family living in crowded conditions has resulted in an increased demand for smaller packages and more prepared and semiprepared foods. For example, there has been a trend toward smaller-sized cans for canned foods. Breakfast foods are now packed in individual servings for the family which cannot use a large box before its contents lose their freshness. In a study of potato purchasing habits of Chicago consumers, three out of four bought potatoes in units of five pounds or less.[2] Not many years ago, the peck was the common unit of sale. The retail experimentation with cut-

[1] Estimates from retail food store data, *Weekly Digest of Food Distribution*, May 31, 1952.

[2] North Central Regional Publication 24, *Consumer Acceptance of and Preferences for Potatoes*, North Dakota Bulletin 374, 1952.

up chicken and turkey halves and quarters has come about largely through the effort to satisfy the desire for a smaller purchasing unit. In one city, it was found that 72 percent of the interviewed families said they would eat turkey more often if it were available in smaller units.[3] Such developments usually neither simplify nor reduce the cost of marketing.

*Income Distribution*

Though some sections of the country have high average incomes and others low, all families in each area do not have high or low incomes. Wide variation in incomes is characteristic of practically any particular place.

Table 2A indicates the wide range of incomes which exist. In the relatively prosperous year of 1950, 13 percent of the spending units made less than $1,000 annually. This group accounted for only 2 percent of the nation's income. On the other hand, the 6 percent of the units which made $7,500 or more accounted for over 20 percent of our total incomes. In 1950, it required nearly three-fourths of the units to account for one-half of the total income. As would be expected, incomes varied widely among the various occupational groups (Table 2B). The median income of the professional or self-employed person was over twice that of the unskilled laborer.

These income differences are also reflected in the marketing structure. Retail grocery stores adopt different practices and handle different items in serving the different income groups. It has been estimated that food expenditures take about half of the incomes of city families having less than $2,000 per year. These people must watch what they buy very care-

TABLE 2A. *Income Grouping of Spending Units, 1950*

| | UNITS | | INCOME | | INCOME AFTER FEDERAL INCOME TAX |
|---|---|---|---|---|---|
| ANNUAL INCOME BEFORE TAXES | PERCENT IN GROUP | CUMULATIVE PERCENT | PERCENT IN GROUP | CUMULATIVE PERCENT | PERCENT IN GROUP |
| Under $1,000 | 13 | — | 2 | — | 2 |
| $1,000–1,999 | 17 | 30 | 7 | 9 | 8 |
| 2,000–2,999 | 19 | 49 | 13 | 22 | 14 |
| 3,000–3,999 | 19 | 68 | 18 | 40 | 19 |
| 4,000–4,999 | 12 | 80 | 16 | 56 | 16 |
| 5,000–5,999 | 14 | 94 | 23 | 79 | 23 |
| 7,500–9,999 | 3 | 97 | } | } | } |
| 10,000–over | 3 | 100 | }21 | }100 | }18 |
| Mean Income | | | | $3,500 | |
| Median Income | | | | 3,000 | |

[3] L. E. Dawson and G. B. Wood, *Merchandising Turkey Quarters*, Indiana Bulletin 537, 1949.

TABLE 2B. *Distribution of Spending Units and Income among Occupational Groups, 1950*

| ANNUAL INCOME BEFORE TAXES | PROFESSIONAL | MANAGERIAL, SELF-EMPLOYED | SKILLED, SEMI-SKILLED | CLERICAL, SALES PEOPLE | UNSKILLED | FARM OPERATOR |
|---|---|---|---|---|---|---|
| | PERCENT OF UNITS | | | | | |
| Under $1,000 | 4 | 5 | 2 | 2 | 11 | 36 |
| $1,000–1,999 | 8 | 11 | 11 | 14 | 33 | 22 |
| 2,000–2,999 | 14 | 11 | 19 | 29 | 28 | 15 |
| 3,000–3,999 | 17 | 15 | 30 | 19 | 18 | 9 |
| 4,000–4,999 | 14 | 12 | 20 | 12 | 7 | 4 |
| 5,000–7,499 | 24 | 23 | 17 | 17 | 3 | 6 |
| 7,500–over | 19 | 23 | 1 | 7 | — | 8 |
| Median Income | $4,500 | $4,500 | $3,660 | $3,200 | $2,200 | $1,900 |

Spending Unit: All persons living in same dwelling and belonging to same family, who pooled incomes. Does not include armed forces on military reservations; hospital, religious, or penal institutions; or people living in hotels, large boarding houses, etc.

Income: Sum of net money earnings from civilian employment; does not include income received in kind, value of farm inventory changes, or capital gains or losses.

SOURCE: *Federal Reserve Survey of Consumer Finance*, August, 1951.

fully and make every penny count. On the other hand, families having incomes above $7,500 spend only 17 percent of their income on food. These families can well afford the so-called food luxuries and fancy qualities.[4] Generally, those stores serving higher income groups will stock more prepackaged and higher quality produce and meats. The stores of a New York City grocery chain located in high income areas handled twice as many fresh vegetable items as those in low income areas.[5] Also in New York City, it was found that only 11 percent of the apples handled by retailers in low income areas graded U. S. No. 1 or better. However, 80 percent of the apples handled by retailers in the high income areas graded U. S. No. 1 or better.[6]

Such income variation means there are always buyers for cheaper, lower quality foods as well as for the more expensive, higher quality foods. Commercial grade beef and bargain counter fresh vegetables have a market as well as prime steaks and fancy vegetables. The job of the marketing machinery is to assure that each kind finds its potential buyers.

Many who would improve marketing focus their attention only on improving quality, providing more services, and making fancier packages.

[4] *Low Income Families and Economic Stability*, Joint Committee on the Economic Report, 81st Congress, 1st Session, p. 5.

[5] M. P. Rasmussen, *Consumer Purchases of Fresh Vegetables at Retail*, New York Bulletin 849, 1948.

[6] M. P. Rasmussen, F. A. Quitslund, and E. W. Coke, *Some Facts Concerning Competition Between Apples and Other Fruits at Retail, New York City, 1939*, Farm Credit Administration, USDA Misc. Report 25, 1940.

Just as the market for mink coats is limited, so is the market for expensive foods limited. One of the facts of agricultural marketing is that the bulk of food products must be sold to the large group of low and middle income people.

*Income Levels and Food Consumption*

Studies of food consumption of people at different income levels have been made with varying results. Table 3 gives the results of some of these studies. The data in this table are presented in terms of the variation from the average instead of in actual pounds per capita. This allows a better comparison of the changes which occur at the different income levels.

TABLE 3. *Per Capita Food Consumption by Income Level (1935–39 Average Consumption = 100)* *

| FOOD GROUP | INDEX OF CONSUMPTION PER CAPITA IN CONSUMER UNITS WITH INCOMES OF | | | | | | |
|---|---|---|---|---|---|---|---|
| | UNDER $500 | $500–$999 | $1,000–$1,499 | $1,500–$1,999 | $2,000–$2,999 | $3,000–$4,999 | $5,000 AND OVER |
| | (1935–39 average = 100) | | | | | | |
| Dairy products: | | | | | | | |
| Fluid milk & cream | 54 | 78 | 97 | 111 | 117 | 127 | 143 |
| Cheese | 49 | 67 | 85 | 109 | 127 | 135 | 147 |
| Evaporated milk | 66 | 95 | 129 | 138 | 130 | 106 | 89 |
| Ice cream | 22 | 63 | 109 | 141 | 179 | 213 | 264 |
| Potatoes | 98 | 100 | 111 | 96 | 96 | 86 | 82 |
| Beans, dry | 143 | 126 | 127 | 114 | 90 | 76 | 60 |
| Fresh fruits | 31 | 50 | 72 | 88 | 117 | 132 | 166 |
| Canned fruits | 70 | 84 | 103 | 120 | 138 | 136 | 149 |
| Dried fruits | 41 | 70 | 91 | 100 | 107 | 118 | 134 |
| Fresh vegetables | 95 | 90 | 93 | 96 | 98 | 123 | 164 |
| Canned vegetables | 61 | 100 | 122 | 142 | 149 | 156 | 179 |
| Eggs | 70 | 87 | 105 | 114 | 120 | 123 | 126 |
| Meats, poultry, fish: | | | | | | | |
| Beef & veal | 39 | 63 | 83 | 102 | 119 | 127 | 133 |
| Lamb & mutton | 5 | 17 | 32 | 45 | 70 | 113 | 170 |
| Lean pork | 74 | 102 | 122 | 127 | 132 | 141 | 148 |
| Chicken | 90 | 98 | 103 | 104 | 109 | 137 | 156 |
| Fish | 110 | 102 | 94 | 88 | 97 | 98 | 94 |
| Flour & cereal products | 124 | 116 | 104 | 97 | 97 | 91 | 91 |
| Butter & other fats: | | | | | | | |
| Butter | 48 | 55 | 72 | 80 | 87 | 105 | 114 |
| Margarine | 107 | 152 | 169 | 152 | 114 | 65 | 38 |
| Sugar and sirups | 89 | 100 | 103 | 104 | 106 | 112 | 125 |
| Coffee | 82 | 97 | 110 | 115 | 118 | 120 | 136 |
| All foods | 72 | 86 | 99 | 107 | 115 | 123 | 139 |

* Based on consumption patterns of the 1935–36 and 1942 studies of consumer purchases.

SOURCE: From data appearing in *Consumption of Food in the United States*, USDA Misc. Publication 691.

The total quantity of food consumed per person increases as incomes rise. While it may be true that the human stomach can hold only so much, this point is evidently not reached by very many people in our society. It should be noted that for each change in the income group there is a change in the total amount of food consumed. The level of income at which people would not consume any additional amounts of food is not known.

However, consumption of all kinds of food does not increase with rising incomes. The consumption of some foods actually declines. For example, the consumption of fluid milk, which is a highly desirable product for most people, increases rapidly with rising incomes. On the other hand, the consumption of condensed milk increases for a while and then falls off. Potato and dry bean consumption generally decreases as incomes rise. On the other hand, the consumption of fruits and vegetables rises sharply. These same tendencies of increasing and decreasing consumption are found in comparing meats with fish and butter with margarine.

A study conducted in 1938–1939 found that low income families bought 310 pounds of white potatoes per family while high income families bought only 164 pounds. It also was found that low income families purchased about 151 pounds of other fresh vegetables while high income families purchased about 217 pounds.[7] Another example of consumption differences related to income is found in the consumption of frozen orange juice concentrate. Only 35 percent of the families having incomes under $7,200 used the concentrate while 48 percent of the families having incomes above $7,200 used the product. The first group consumed forty-eight ounces of the product yearly; the latter, eighty-eight ounces.[8]

There are then two generalizations which can be made concerning family income level and food consumption. First, higher income families purchase a greater total amount of food than do lower income families. Perhaps they waste more also, but this is not a point of great concern to the marketing machinery. And second, the more desirable luxury type foods are purchased in increasing amounts by people with higher incomes, while the purchases of relatively cheaper, so-called staple foods remain relatively constant or fall as incomes increase.

## REGIONAL DIFFERENCES IN FOOD CONSUMPTION

There are definite differences in food consumption patterns between one region of the country and another which cannot be explained on the basis of income or other common factors. National meat packers point out

[7] Rasmussen, *op. cit.*

[8] K. A. Fugett, J. A. Bayton, and H. W. Bitting, *Citrus Preferences Among Customers of Selected Stores*, Texas Bulletin 722, 1950.

that different sections of the country prefer different weights in beef carcasses. New York and Boston prefer the heavy animals weighing from 1,100 to 1,500 pounds. The Southeast, however, prefers animals which weigh from 600 to 800 pounds; Chicago consumers like cuts from animals which weigh from 750 to 850 pounds. Pacific Coast consumers prefer the heavier animal weighing from 900 to 1,200 pounds.[9] Lamb consumption is very largely limited to the East and West Coasts with very little being consumed in the interior areas. Boston housewives prefer brown eggs while New York housewives prefer white ones.

Table 4 indicates consumption differences for persons of like incomes in four cities in different regions of the country. Consumers in Birmingham ate more pork and less beef than consumers in any of the other cities. People in San Francisco were relatively heavy lamb and poultry con-

TABLE 4. *Average Weekly Quantities of Selected Food Items Purchased Per Person in Families Having $2,000 to $2,999 Incomes in Four Cities, Winter, 1948*

| ITEM | BIRMINGHAM, ALABAMA | BUFFALO, NEW YORK | MINNEAPOLIS, ST. PAUL, MINNESOTA | SAN FRANCISCO, CALIFORNIA |
|---|---|---|---|---|
| | POUNDS PER PERSON PER WEEK (EXCEPT WHERE NOTED) | | | |
| Whole milk (qts.) | 1.36 | 3.38 | 3.65 | 3.20 |
| Buttermilk (qts.) | .71 | .03 | .05 | .03 |
| Evaporated milk | 1.08 | .41 | .21 | .49 |
| Cheese | .24 | .31 | .27 | .63 |
| Butter | .09 | .24 | .35 | .18 |
| Margarine | .32 | .15 | .12 | .19 |
| Eggs | .58 | .50 | .50 | .53 |
| Plain flour | 1.04 | .47 | .63 | .32 |
| Cornmeal | 1.06 | .01 | .03 | .06 |
| White bread | 1.31 | 1.67 | 1.49 | 1.11 |
| Whole wheat bread | .13 | .04 | .19 | .32 |
| Beef | .87 | .97 | .91 | 1.09 |
| Lamb | .03 | .13 | .04 | .43 |
| Pork, fresh | .64 | .50 | .45 | .21 |
| Salt pork | .34 | .03 | .03 | .02 |
| Poultry | .29 | .42 | .14 | .44 |
| Fresh fruits | 1.82 | 2.38 | 2.46 | 2.19 |
| Potatoes | 1.20 | 2.58 | 2.51 | 1.65 |
| Sweet potatoes | .61 | .09 | .07 | .12 |
| All other fresh vegetables | 2.20 | 2.33 | 1.72 | 3.40 |
| Canned fruits, vegetables | 1.77 | 2.63 | 2.13 | 2.38 |
| Total sugars, sweets | 1.86 | 1.31 | 1.09 | .95 |

SOURCE: *Family Food Consumption in Four Cities*, Preliminary Report No. 7, USDA, Bureau of Human Nutrition and Home Economics, 1949.

[9] From a Mimeograph of the Agricultural Research Department, Swift and Company.

sumers. Buffalo and Minneapolis consumers were heavy potato eaters, while Birmingham people consumed more sweet potatoes. Further study of Table 4 will show several other rather decided differences in eating habits among the four cities.

What determines these differences? Some are undoubtedly the effect of regional production patterns. Whatever the cause, however, such preferences must be recognized by the marketing agencies in getting the right things to the right places.

## OTHER FACTORS AFFECTING CONSUMPTION PATTERNS

### *Religious Differences*

Catholics eat no meat on Friday but do eat fish and sea foods. Consequently, the fish and sea food industry is especially geared to meet this demand. Movement of the sea products into the retail channels is scheduled to be on hand for the Thursday and Friday trade. The Lenten season also affects the eating habits of many consumers.

The dictates of the Jewish religion are also of great marketing importance. Jewish people do not eat pork, and the other meat which they consume must be "kosher." Kosher meat is that which has been slaughtered according to Jewish religious regulations under the supervision of a rabbi or his representative. Fresh kosher meat is usually consumed within seventy-two hours after slaughter. When the seventy-two-hour period has expired, a special religious dispensation can extend the period during which the meat may be consumed by orthodox Jews.

Kosher requirements mean that normal slaughtering procedures in the packing plant must be altered. The time limit means that livestock, which would otherwise be slaughtered near the production areas in the mid-west and shipped as carcasses, are shipped alive into the consuming area for slaughter. Slaughter there permits the distribution through the retail trade and into the hands of the Jewish consumer before the time limit expires. The large kosher trade for chickens is a factor which maintains a large retail market for live chickens in many of our cities. For the non-Jewish trade, the retailers can buy and sell the dressed bird.

### *Race and Nationality Differences*

Many of our large cities and certain sections of the country have large groups of foreign-born people who have retained the consumption habits of their native lands. Though these differences are becoming less important as these people are absorbed into our society, they still can be factors of considerable importance to the marketing machinery.

For example, in studying the retailing of chicken in Philadelphia, it was found that stores serving foreign elements usually handled live poultry. Nearly two-thirds of operators of stores which handled meat but did not handle frying chickens gave nationality and racial preference of their customers as the reason.[10] Consumption of fluid milk also varies with racial and national groups. Northern European and Jewish groups are relatively large consumers of milk, while southern Europeans and Negroes consume smaller amounts. Negroes are much greater consumers of canned milk, while the Jewish people use much less.[11] Certain of the middle eastern national groups prefer lamb or mutton with little or no fat which most of us would consider highly unpalatable.

*Effect of Special Days*

Different consumption patterns have grown up around the different holidays. Probably the most important of these are Thanksgiving and Christmas. Cranberries, nuts, candies, and other food luxuries move in increased amounts at that time. Turkey is the traditional meat, and the large majority of the turkey production is consumed during November and December. In a study of the cities of Baltimore, Trenton, and New York, it was found that 78 to 90 percent of the families served turkey at Christmas.[12] This same survey found that pork was preferred at Easter, and chicken on the Fourth of July.

The marketing machinery must be geared to meet these extra demands during the particular season. Such consumption habits, once established, may become very hard to change. The turkey industry is faced with this situation. With increased turkey production, the industry has attempted to persuade consumers to accept turkey as a regular item of their diet. However, turkey has been associated with holiday meals for so long that it has been very difficult to obtain its acceptance as a meat for year-round consumption.

## CHANGES IN CONSUMPTION THROUGH TIME

All of the factors which have been discussed are important in determining what, when, and how much people will eat. However, we must not get the impression that consumption patterns and habits are firmly fixed

[10] W. T. McAllister and R. O. Bausman, *The Retail Marketing of Frying Chickens in Philadelphia*, Delaware Bulletin 275, 1948.

[11] North Central Regional Publication 10, *What Makes the Market for Dairy Products?* Wisconsin Bulletin 477, 1948.

[12] H. D. Smith, *Consumer Preference and Buying Habits for Chicken*, Maryland Extension Publication 8, 1951.

and never change. This is not so. Over the years, consumption habits do change.

The composition of our aggregate diet is considerably different now from what it was forty years ago. A study of Figure 4 will show that the per capita consumption of fruits and vegetables and dairy products has been increasing steadily. On the other hand, the consumption of grain products and potatoes has been steadily declining. Up until about 1940, the consumption of eggs and meat had changed very little. During the last ten years, the consumption of these products also has increased.

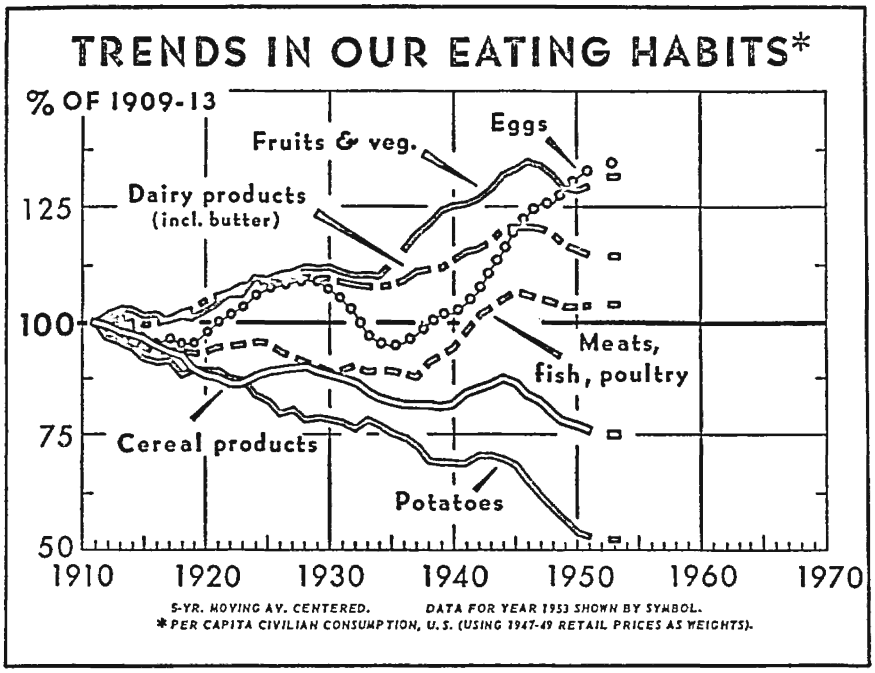


FIGURE 4. *Changes in our eating habits through time.* (*Courtesy* USDA.)

Table 5 indicates the changes which have occurred in the consumption of specific foods. In the meats, beef consumption is down somewhat, pork up a little, and lamb consumption has held its own. Apple consumption has decreased sharply, while the consumption of oranges has climbed phenomenally. Snapbeans and tomatoes have increased; potatoes, wheat flour, and rice have declined.

All of these changes taken together mean that generally Americans are eating better. They are eating more of the more desirable foods and less of the less palatable foods. Why have these changes taken place? There are,

no doubt, several reasons. Such changes definitely indicate a rising standard of living in the United States. The most efficient source of nutrients is generally the cereals. Countries, such as China and India, which must work hard to supply the bare food necessities, are large rice and cereal consumers.

TABLE 5. *Changes in Per Capita Consumption of Twenty Selected Foods, 1910–19 to 1940–49*

| FOOD ITEM | PER CAPITA CONSUMPTION 1910–19 | 1940–49 | 1940–49 AS PERCENT OF 1910–19 |
|---|---|---|---|
| | LBS. | LBS. | PERCENT |
| Beef | 50.0 | 47.4 | 95 |
| Lean pork | 41.9 | 46.1 | 110 |
| Lamb | 5.5 | 5.5 | 100 |
| Chicken | 19.0 | 24.6 | 130 |
| Eggs | 36.4 | 42.8 | 118 |
| Fluid milk | 263.0 | 306.0 | 116 |
| Evaporated milk | 3.2 | 16.9 | 528 |
| American cheese | 2.8 | 4.4 | 157 |
| Apples, fresh | 56.2 | 32.3 | 58 |
| Oranges, fresh | 14.4 | 37.4 | 260 |
| Peaches, fresh | 14.9 | 13.6 | 91 |
| Snapbeans, fresh | 6.9 * | 8.9 | 129 |
| Tomatoes, fresh | 19.6 * | 23.3 | 119 |
| Potatoes | 155.4 | 116.9 | 75 |
| Dry edible beans | 6.3 | 8.4 | 133 |
| Wheat flour | 194.0 | 147.0 | 76 |
| Wheat cereal | 3.1 | 3.6 | 116 |
| Rice | 6.8 | 5.3 | 78 |
| Sugar, refined | 76.5 | 87.7 | 115 |
| Coffee | 8.7 | 13.8 | 159 |

* 1920–24.

SOURCE: Data computed from *Consumption of Food in the United States*, USDA Misc. Publication 691.

Many things have contributed to this changing pattern. Efficiency of production has increased which gives consumers more for the same amount of money, or in many cases less money. Faster transportation and improved refrigeration have made the fruit and vegetables grown round the year in various sections of the country available in every city nearly every day of the year. Other new technologies have increased the number of uses of many products.

Even with the great improvements over the years, nutritional experts point out that many American diets are not adequate. One study summarized by saying that the average individual of a family earning less than $1,000 yearly is seriously undernourished. Also, there is a tendency of all income classes to consume less than the optimum quantities of the protec-

tive foods such as dairy products, tomatoes, citrus fruits, and leafy green and yellow vegetables. It concluded that these deficiencies in the diet stemmed from two basic causes, (1) insufficient income and (2) insufficient knowledge.[13]

## FOREIGN MARKET FOR AGRICULTURAL PRODUCTS

At one time during our history, we were a great exporter of farm products. Agricultural exports were much larger than agricultural imports. The foreign market was then a major factor in the total market for our farm products.

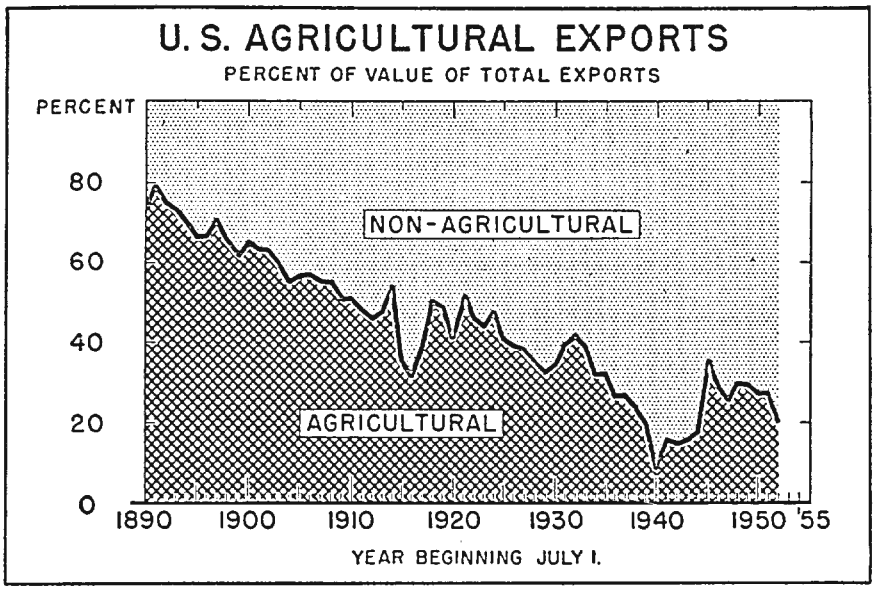


FIGURE 5. *The changing composition of the exports of the United States. (Courtesy USDA.)*

During the latter part of the nineteenth century, agricultural exports made up about 75 percent of our total exports. Since that time a smaller and smaller portion of our total exports have been agricultural products. During the five years immediately following World War II, agricultural exports made up only slightly over 25 percent of our total exports (Figure 5). The proportion of our agricultural production which has been sold abroad also has fallen sharply. During 1900–1914 approximately 18 percent of the total farm output was exported; during 1921–1929 about 15 percent;

[13] W. W. Cochrane, *High-Level Food Consumption in the United States*, USDA Misc. Publication 581, 1945, p. 13.

during 1930–1939 about 8 percent; and during 1940–1950 about 9 percent.[14] In fact, during much of this century we have been a net importer of farm products—the value of agricultural imports exceeded that of agricultural exports.

However, the fact that foreign markets are not very important in terms of our total agricultural production does not mean that foreign outlets are not of considerable importance for some commodities. Figure 6 shows the pattern of agricultural exports since 1914. It also shows the breakdown of

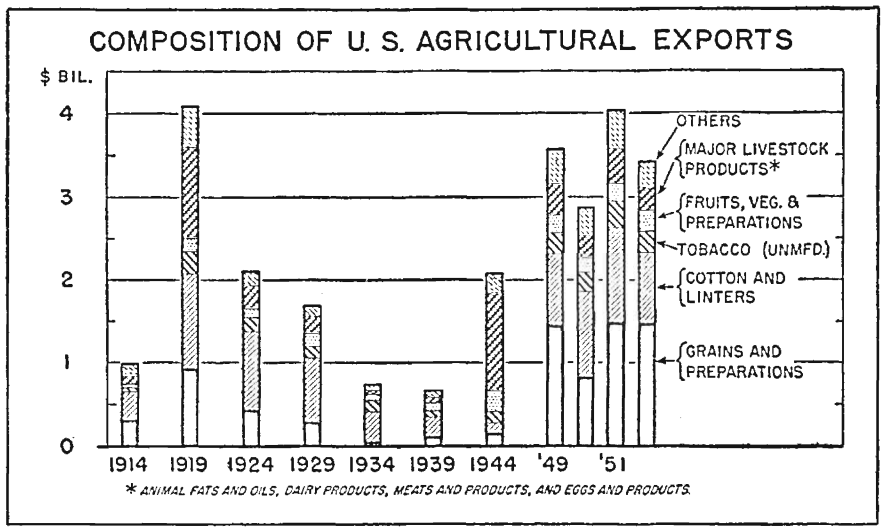


FIGURE 6. *The composition of United States agricultural exports. (Courtesy USDA.)*

these exports into major commodity groups. Our greatest individual agricultural export commodities are cotton, tobacco, and wheat. During 1947–1951, these commodities accounted for 56 percent of the value of agricultural exports.

Figure 7 indicates the importance of the foreign markets in terms of the total domestic production for agriculture. While foreign exports may not be a major outlet for agricultural products in the aggregate, they are of importance for many commodities. Producers of wheat, cotton, tobacco, rice, and some fruits look upon the foreign market as a major outlet. From this we can easily see why tariffs and export-import policies have always been a major concern to agriculture. Sizable groups of politically powerful producers, such as the wheat, cotton, and tobacco interests, find their markets

[14] S. E. Johnson, "A Mid-Century Look at U. S. Agriculture," *Journal of Farm Economics*, November, 1951, pp. 649–662.

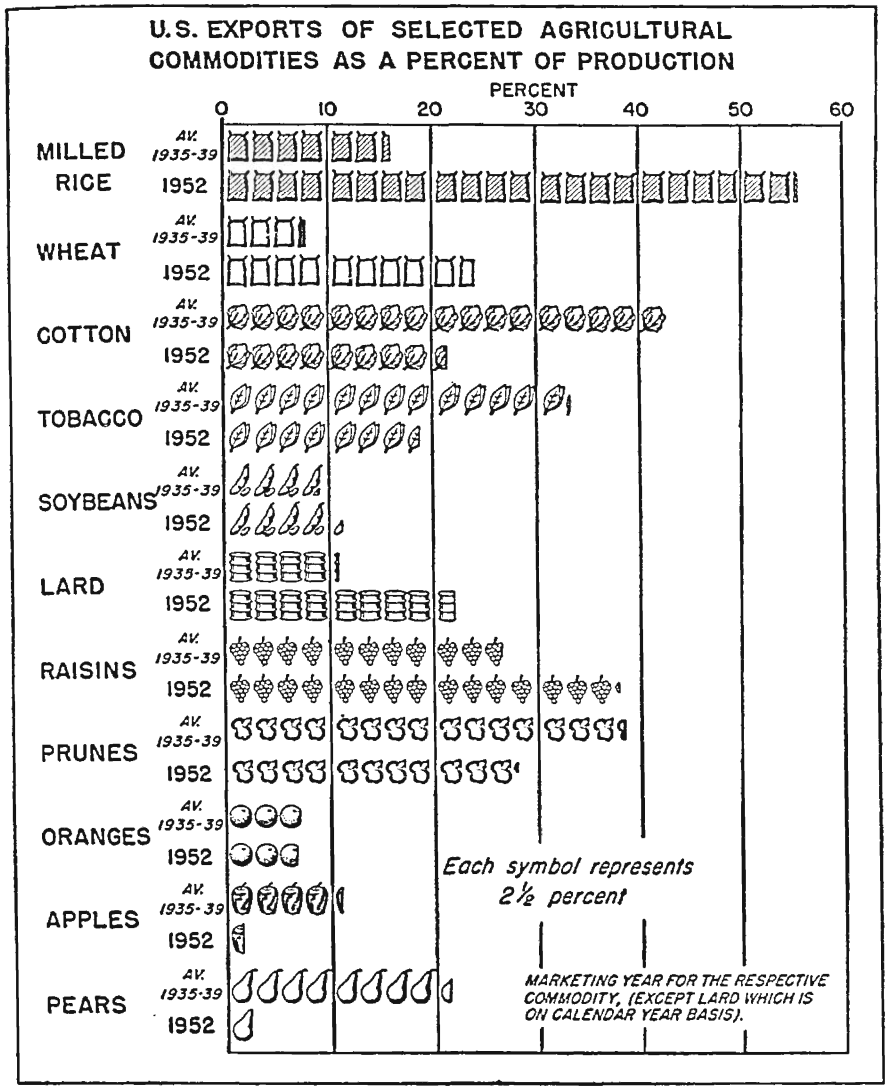


FIGURE 7. *The relative importance of the export market for selected agricultural commodities.* (Courtesy USDA.)

closely tied to foreign conditions. While we shall not devote much space to this problem, its importance is great and must not be overlooked in the evaluation of marketing programs and policies.

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CHAPTER FOUR

# *Agricultural Production*

Fully as important as a knowledge of the consumers of agricultural products is the knowledge of the nature of agricultural production. Only with an understanding of production problems will some of the difficulties of the marketing processes be fully appreciated. Agriculture would have been saved from some unsound suggestions for solving its problems if the people advancing the cure-alls had been familiar with the production side of the picture.

## THE PRODUCTION PLANT

Many people think of farms and land area as synonymous. The United States is a big country; hence it is commonly believed that there is a relatively unlimited amount of farm land upon which to produce food. This, of course, is not true. Nearly two-fifths of the land area of the country

TABLE 1. *Major Use of Land, United States, 1950*

| LAND USE | PERCENT OF TOTAL AREA | |
|---|---|---|
| Land in farms: | | |
| Cropland | 25 | |
| Pasture | 29 | |
| Woodland, farmlots, etc. | 7 | |
| Total in farms | | 61 |
| Land not in farms: | | |
| Grazing land | 22 | |
| Forest and all other | 17 | |
| Total not in farms | | 39 |
| Total U. S. land | | 100 |

SOURCE: H. H. Wooten, "How Our Land Is Used," *Agricultural Situation*, February, 1952.

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receives less than twenty inches of rainfall annually, and therefore has very limited agricultural potential from that standpoint alone. The National Resources Board has estimated that 47 percent of our land area is non-arable because of topography, moisture, soil conditions, and so on, and only 16 percent of the land is rated good or better for agricultural uses. Table 1 shows the way our land is actually used. Only one-fourth of the total is in cropland. About half is available for grazing.

*The Production Unit*

The principal unit of agricultural production is the so-called family farm. In 1950, only 22 percent of the total people working on farms were hired labor. The other 78 percent were family workers. About three-fourths of our total commercial output comes from farms which are operated as a family unit. The remainder comes principally from large-scale aggregates. Part-time or very small units contribute very little.

This means that the average farm operator is the manager and laborer all rolled into one. The sale of farm products is largely done by the operator who must know something about both production and marketing. And for the average farmer, the amazingly complex job of agricultural production demands most of his attention. There is little time for him to become a specialist in marketing.

TABLE 2. *Distribution of Farms and Production by Type of Farming Group, United States, 1945*

| TYPE OF FARMING GROUP | NUMBER OF FARMS | VALUE OF PRODUCT |
|---|---|---|
| | PERCENT OF U. S. TOTAL | |
| Fruit and vegetable farms | 3.9 | 8.8 |
| Horticultural specialty and forest product farms | 0.8 | 1.5 |
| All other crop farms | 31.8 | 32.9 |
| Livestock farms | 13.8 | 23.1 |
| Dairy farms | 9.5 | 12.6 |
| Poultry farms | 4.7 | 5.2 |
| General farms | 11.8 | 12.5 |
| Subsistence and nonclassified | 23.8 | 3.3 |
| All farms | 100.0 | 100.0 |

SOURCE: F. L. Thomsen, *Agricultural Marketing* (New York, McGraw-Hill), adapted from table, p. 53.

Even in its production organization, the average farm is considerably less specialized than are firms in manufacturing. Table 2 classifies farms as to their major source of incomes. The large bulk of the commercial farms are crop, livestock and general farms. This group, though, encompasses a

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wide range of specialization. Some of the crop farms may be wheat farms; some of the livestock farms, hog farms. But many crop farms will raise several types of crops—many livestock farms several kinds of animals.

Another fact must be added to this picture of many relatively small and highly diversified production units. The amount of products sold in any one year from the great majority of farms is very small (Table 3). In 1950, less than one-fourth of the farm units sold products worth $5,000 or more. In 1945, it was estimated that the top third of the farms accounted for 78 percent of the total value of farm production; the lower third, only 5 percent. The number of farmers who are actively interested in selling large amounts of products is considerably less than the total number of farmers. The near-subsistence farmers, though making up nearly one-fourth of the farms, are not an important part of the commercial marketing machinery, since they contribute only about 3 percent of the total product.

TABLE 3. *Farms Classified by the Value of Products Sold, United States, 1950*

| VALUE OF PRODUCTS SOLD | PERCENT OF TOTAL FARMS | |
|---|---|---|
| Commercial farms: | | |
| $25,000 and over | 2.0 | |
| $10,000 to $24,999 | 7.2 | |
| 5,000 to 9,999 | 13.5 | |
| 2,500 to 4,999 | 16.4 | |
| 1,200 to 2,499 | 16.6 | |
| 250 to 1,199 * | 13.1 | |
| Total commercial farms | | 68.8 |
| Part-time farms † | | 11.9 |
| Residential and abnormal farms | | 19.3 |
| All farms | | 100.0 |

* Operator working off farm less than 100 days and farm sales greater than other income.

† Operator working off farm 100 days or more and other income exceeding farm sales.

SOURCE: "A Better Picture of Our Small-Scale Farms," *Agricultural Situation*, March, 1952.

All of this adds up to two very important facts which have a great impact upon the marketing of farm products. The first is that much of our production is sold in relatively small lots from a large number of units. The hog marketing machinery cannot get all the hogs from farm group "A" and the poultry marketing machinery get all the poultry from farm group "B." Some poultry must be assembled from "A" and some hogs from "B." The marketing machinery must be set up to serve both groups for both products.

The second observation is that the farmer is by nature—and probably by necessity—a man primarily interested in production and only secondarily interested in marketing. He either sells very small amounts at a time or very few times a year. This attitude helps explain why obvious shortcomings in marketing continue for long periods of time without some effort being made for correction.

## CHARACTERISTICS OF THE PRODUCT

### *A Raw Material*

The output of agriculture is largely a raw material which will be used for further processing. It has been estimated that only about 28 percent of the total volume of agricultural food production moves to consumers in a nonprocessed form. The remaining 72 percent will undergo some processing before it reaches consumers.[1] This processing may be limited, as in the converting of livestock into meat. It may be highly complex as in the converting of wheat into "Wheaties." Regardless of the complexity, however, the product sold by the farmer soon loses its identity as a farm product and simply becomes "food."

### *Bulky and Perishable Products*

Compared to most nonagricultural products, agricultural products are both bulkier and more perishable. Bulk affects marketing functions which are concerned with physical handling. Products which occupy a lot of space in relation to their value almost automatically raise unit transportation and storage costs. A truckload of drugs would be considerably more valuable than a truckload of wheat. In this sense, fruits, vegetables, grain, and meats are all quite bulky.

Perishability, too, can be measured only in relation to other products. All products after a period of time deteriorate. Some agricultural products, like fresh strawberries or fresh peaches, must move into consumption very quickly or they completely lose their value. Wheat, on the other hand, can be stored for a considerable length of time without much deterioration. Even the most storable of agricultural products, however, are usually more perishable than other industrial products.

These characteristics have their effect on the facilities which are necessary to market farm products. Bulkiness, plus the varying production which will be discussed later, requires large storage capacities. Perishable products require speedy handling and often special refrigeration. Quality maintenance often becomes a real and costly problem.

[1] Allen B. Paul, *The Economic Structure of the Food Processing Industries,* Illinois Mimeograph FT 5, p. 5.

## CHARACTERISTICS OF PRODUCTION

### *Total Output*

The total output of the nation's farms has been gradually increasing throughout the years (Figure 1). From 1910 to 1940 the trend in total agricultural output was slowly upward with the exception of the drought years of the mid-thirties. Since 1940, agricultural production has increased as much as it did during the entire previous thirty years.

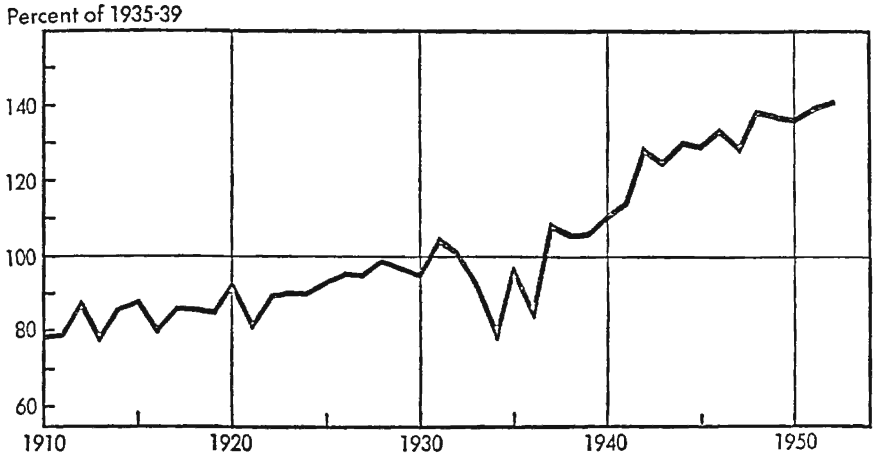


FIGURE 1. *Total United States agricultural production, 1910–1952. (Source: Bureau of Agricultural Economics, USDA.)*

During the past decade or so a revolution has occurred in agricultural production. Practically the same amount of land is under cultivation as in 1910. Farm employment actually declined about 20 percent from 1910 to 1950. However, during the 1940's, crop production per acre increased 15 percent and production per animal unit 10 percent. Much of this has been due to the replacement of the horse with power equipment. Other great improvements have been made in seed variety, livestock nutrition, fertilization, and a multitude of other areas making agriculture more productive. Truly, technology has shown how to grow two plants where one grew before. But it also has put greater pressures on the marketing machinery to move this added production into consumption.

### *Annual Variability in Production*

Total agricultural output is relatively stable from year to year. However, marketing agencies do not handle totals—they are generally specialized to handle individual commodities or groups of commodities. Livestock

TABLE 4. *Year-to-Year Variation in Gross Farm Production, by Groups of Products, United States, 1910–1950*

| PRODUCT | AVERAGE VARIATIONS FROM PRECEDING YEARS | PRODUCT | AVERAGE VARIATIONS FROM PRECEDING YEARS |
|---|---|---|---|
| | PERCENT | | PERCENT |
| Total gross farm production | 5.1 | Truck crops | 5.1 |
| Product added by meat animals and animal products | 2.7 | Vegetables, except truck | 11.0 |
| Total crops | 8.0 | Tobacco | 14.7 |
| Food grains | 12.7 | Fruits and tree nuts | 15.1 |
| | | Feed grains | 15.4 |
| | | Cotton | 17.4 |

SOURCE: T. W. Schultz, *Economic Organization of Agriculture* (New York, McGraw-Hill, 1953), p. 217.

TABLE 5. *Pattern of Annual Production Variability of Selected Products, United States, 1910–45*

| CHANGES IN PRODUCTION FROM PRECEDING YEAR | DAIRY PRODUCTS | POULTRY AND EGGS | MEAT ANIMALS | WHEAT | CORN | FRUITS AND VEGETABLES | TOBACCO | COTTON | POTATOES |
|---|---|---|---|---|---|---|---|---|---|
| PERCENT | NUMBER OF YEARS | | | | | | | | |
| +31 and more | – | – | – | 2 | 2 | 4 | 4 | 3 | 2 |
| +21 to +30 | – | – | – | 2 | 2 | 3 | 2 | 2 | 3 |
| +16 to +20 | – | 1 | – | 4 | 3 | 2 | 2 | 3 | 3 |
| +11 to +15 | – | 1 | 4 | 2 | 5 | 2 | 5 | 4 | 4 |
| +6 to +10 | – | 8 | 9 | 3 | 3 | 5 | 4 | 4 | 2 |
| from 0 to ±5 | 36 | 25 | 18 | 14 | 9 | 7 | 7 | 7 | 5 |
| −6 to −10 | – | 1 | 4 | 1 | 3 | 5 | 3 | 3 | 5 |
| −11 to −15 | – | – | – | 3 | 2 | 3 | 3 | 3 | 6 |
| −16 to −20 | – | – | – | 2 | 3 | 1 | 2 | – | 3 |
| −21 to −30 | – | – | 1 | 2 | 2 | 3 | 2 | 5 | 2 |
| −31 and less | – | – | – | 1 | 2 | 1 | 2 | 2 | – |
| Average change in percent * | 2.1 | 4.1 | 5.9 | 13.1 | 16.1 | 16.2 | 15.3 | 16.2 | 14.5 |

* The apparent disagreement of some of these data with those in Table 4 can be explained by the difference in time period covered.

SOURCE: T. W. Schultz, *Production and Welfare of Agriculture* (New York, Macmillan, 1950), p. 73.

handlers and meat packers are only vaguely interested in the wheat crop. Elevator operators, millers, and bakers spend very few sleepless nights over the vegetable situation. It is the amount of production variation of individual commodities which is of importance to marketing.

Table 4 shows that while aggregate production varies only about 5 percent on the average from year to year, production of the specific commodity groups has a much greater variability. Table 5 shows this variability in greater detail for individual commodities.

There is stability in total agricultural production largely because of the wide diversity of products and large area involved. When one commodity or area is down in production, the chances are that some other commodity or area is up. The pattern of annual variability is different for various commodities. The handlers and processors of dairy products are assured of relatively minor annual change in volume. In contrast, the flour miller found that in seven of the thirty-six years covered in Table 5, the wheat crop varied more than 20 percent from the preceding year.

This production variation means that the marketing machinery must be prepared to handle the varying volume. Referring again to our wheat example, transportation and storage facilities must be available to handle the big crops as well as the average ones. An organization which must be ready to handle largely unpredictable variations in volumes cannot be as fully utilized and efficient as one which has a large measure of control over the volume handled.

### *Seasonal Variability in Production*

In addition to the annual supply variability, agricultural production is highly seasonal. The period of availability of fresh strawberries is quite short. Wheat is harvested over a period of four to eight weeks and the great bulk of it moves immediately into market channels. Apples are harvested within a relatively short period. Egg production is markedly higher in the spring than in the late fall. Almost all agricultural products have an uneven distribution of production throughout the year due to the dependence upon the climatic conditions and biological nature of production.

To the extent that the product is storable, storage capacity must be furnished to hold the product until it is consumed. This means that during part of the year, storage will be used at near capacity. At other times it will be practically empty. To the extent that the product cannot be stored, the product must be consumed immediately. This means that transportation and refrigeration facilities must be available to move it rapidly to the consumer.

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The United States has a wide range of climatic conditions. By taking advantage of this, the season of availability of many commodities can be extended. For example, some strawberries are available in Florida as early as December. Then berries become available from Louisiana and other southern states. The season continues to move up through the central states and finally into Wisconsin. By this method, the effective strawberry marketing period is extended over months instead of two or three weeks. But this means that the marketing machinery must be a flexible one, geared to procurement and movement from a widespread and changing area.

*Quality Variation*

The general quality as well as the total production of agricultural commodities varies from year to year. During some years the growing conditions are such that the crop in general is of high quality. In other years unfavorable conditions prevail and the crop is of much lower quality.

Such variations in the quality of production make it very hard to apply uniform standards for grades from year to year. If the quality of the apple crop is uniformly high, the standards for top grade apples may be strictly adhered to. On the other hand, if the quality of the apple crop is poor, grading standards may be relaxed somewhat to permit some apples to be marketed as top quality.

Variations in the quality also may change marketing patterns. For example, during a year in which corn does not properly mature, large amounts of "soft" corn are harvested. The corn will spoil if not used before the following spring. Farmers then may buy additional feeder stock in order to utilize this corn. The marketing pattern of these feeders, however, will be different from the usual pattern as the feeding period is adjusted to the condition of the corn.

*Areas of Production*

It was found that there was a concentration of our domestic population and income. There is also considerable concentration of agricultural production. Figure 2 shows the national production picture as measured by the value of farm products sold per square mile.

The eastern concentration is due largely to such intensive agricultural crops as milk, eggs, broilers, and vegetables. The middle western area represents the highly concentrated agricultural region. There is considerable justification for the claim of the central "corn-belt" region to the title of food basket of the country. The twelve north central states account for over two-fifths of the total farm marketings of the country.

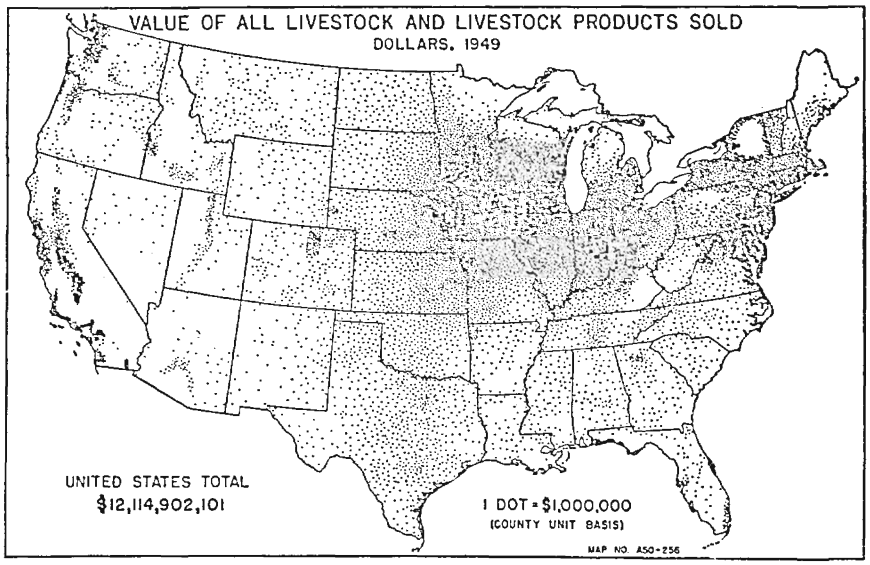
FIGURE 2. *The geographic distribution of total agricultural output in the United States—showing the area of each state proportional to the value of farm products sold, 1950. (Courtesy U. S. Dept. Com.)*

Figure 3 is a series of maps showing where several important commodities are produced. These should be studied carefully as the story they tell is an important one. They, too, show considerable concentration within relatively limited areas. When one gets the production picture in mind, the transportation problem of moving products to consumption areas becomes evident.

*Adjustment of Production to Changing Conditions*

Agricultural output comes from many small units operated independently. The production is to a great extent dependent on weather and biological patterns of reproduction. The farmer may wish to change his output and attempt to do so by planting more or fewer acres or by breeding more or fewer sows. However, the final output is considerably beyond his control, as weather, disease, and other relatively non-controllable factors will affect yields per acre and the productivity of his animals. The fact must be faced that it is not possible quickly to shut off or turn on agricultural production. This means that marketing agencies in the aggregate must adjust themselves to the supplies rather than adjust supplies to suit their needs.

A tomato canner must estimate how much of his product he can sell at a price estimated nearly a year in advance. From this estimate he then can contract suitable acreage with his producers. If his estimation of the



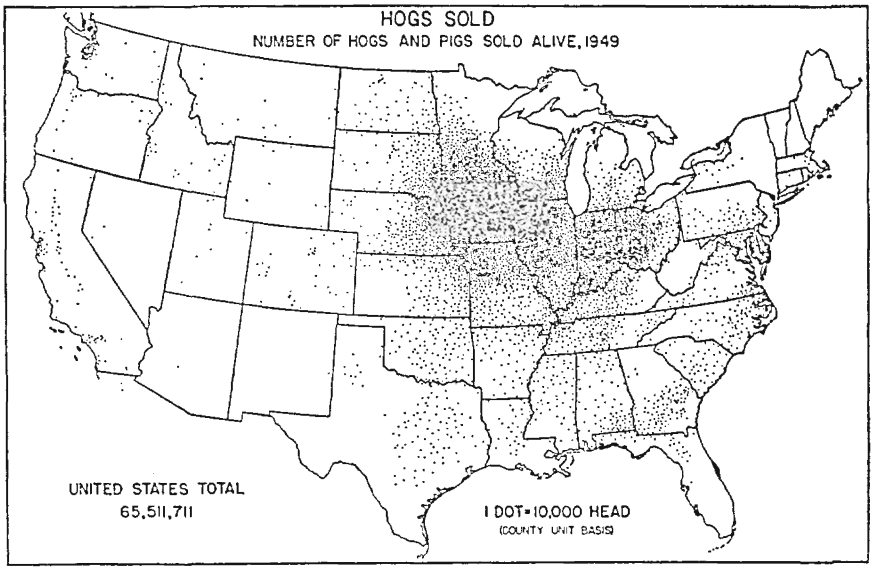
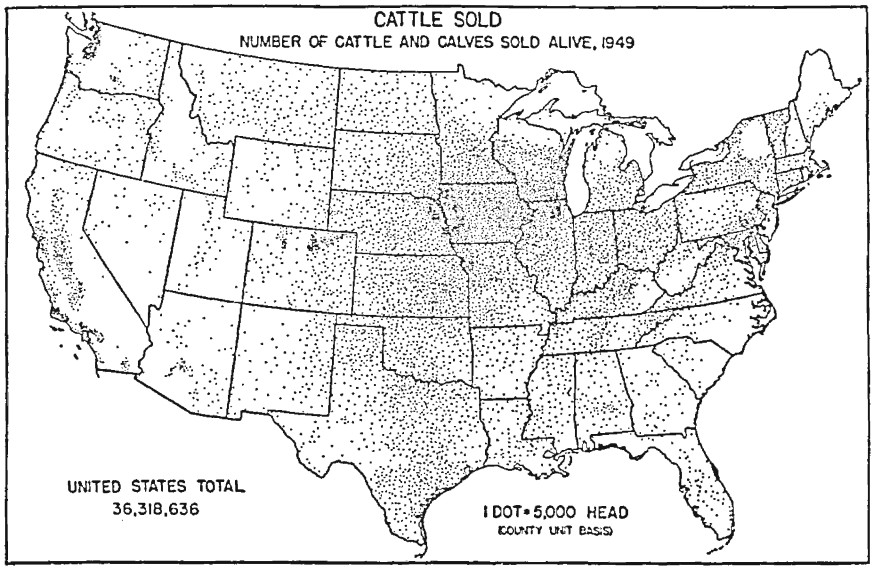
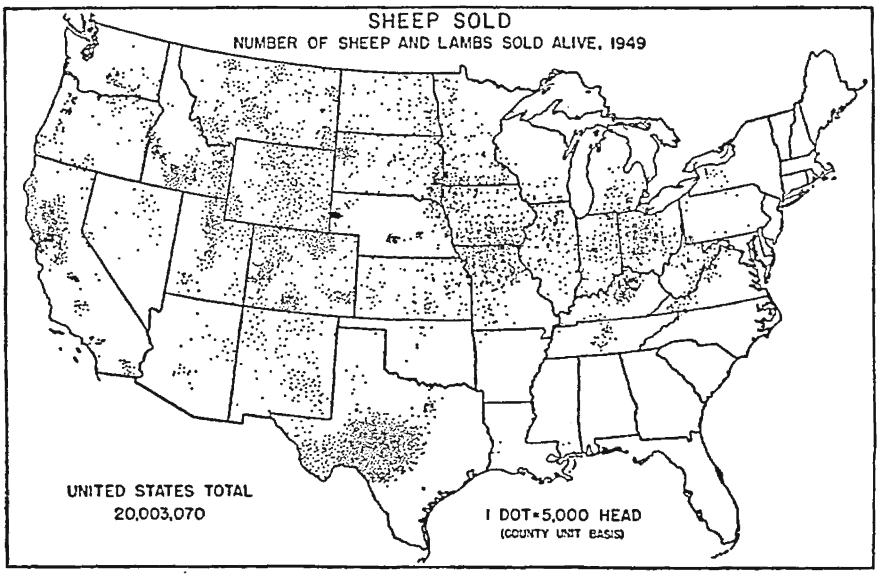




FIGURE 3. *Geographic distribution of the production of selected important agricultural commodities. (Courtesy U. S. Dept. Com.)*

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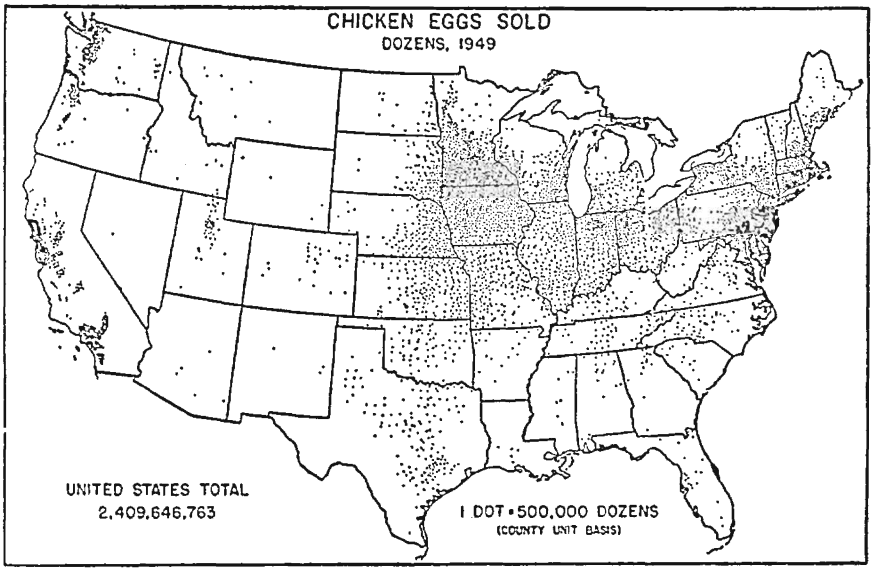


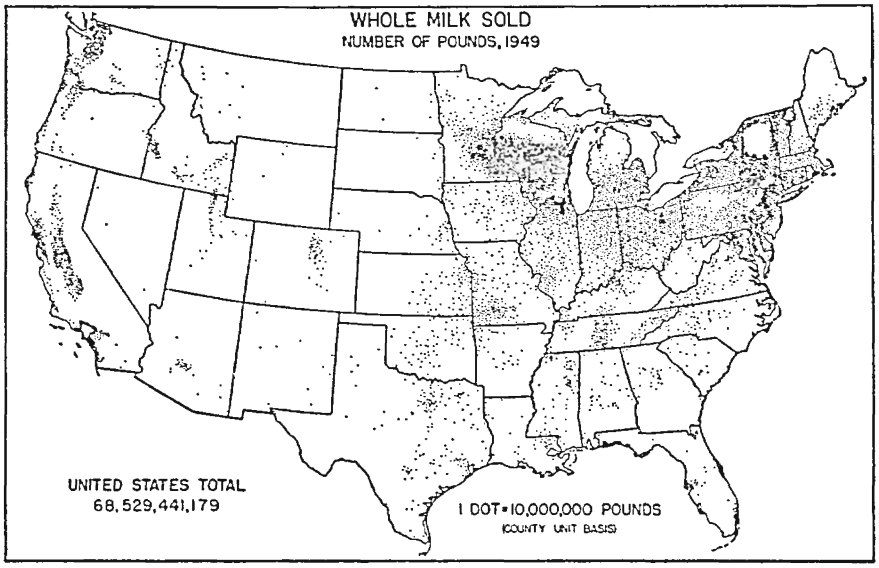
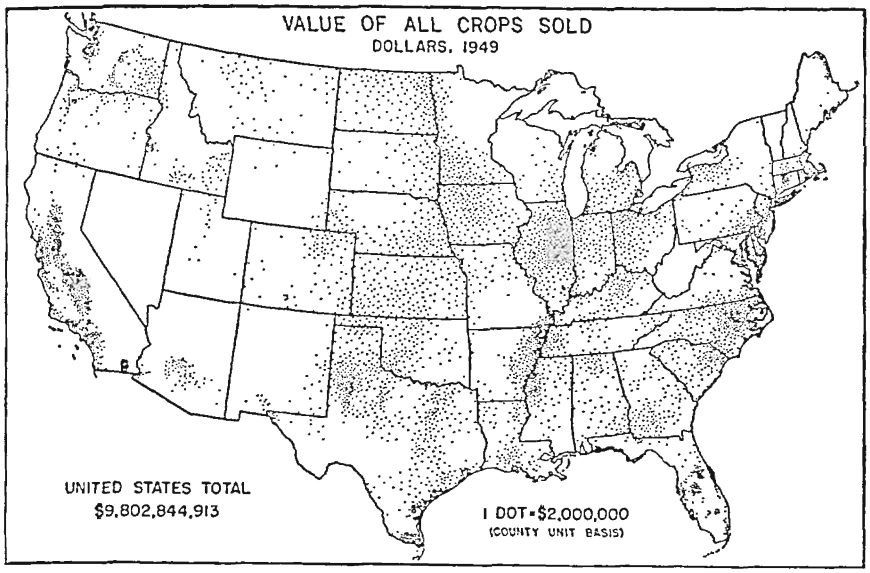
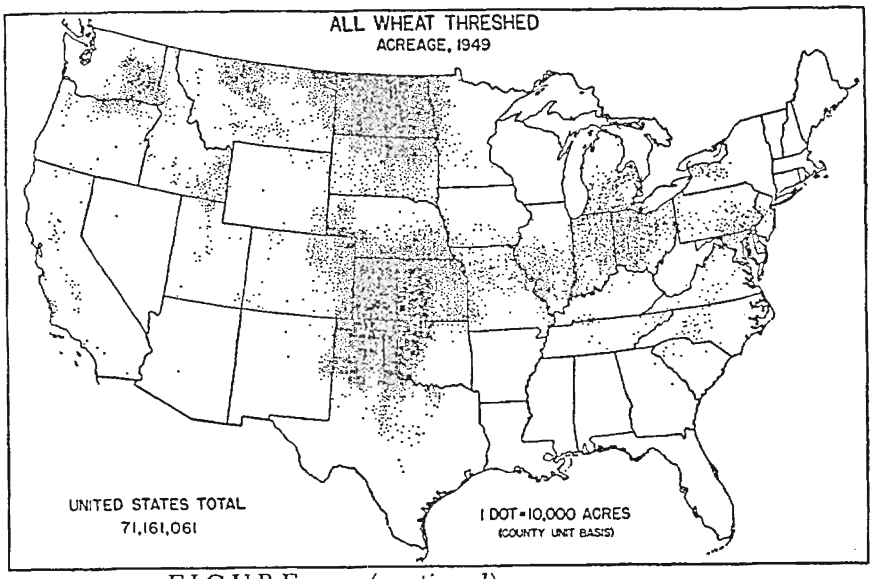




FIGURE 3. (*continued*)

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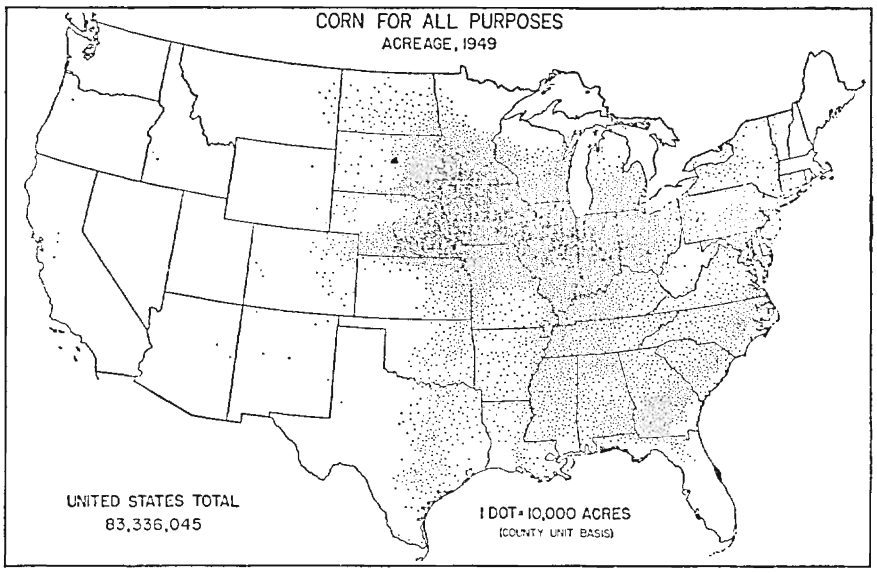


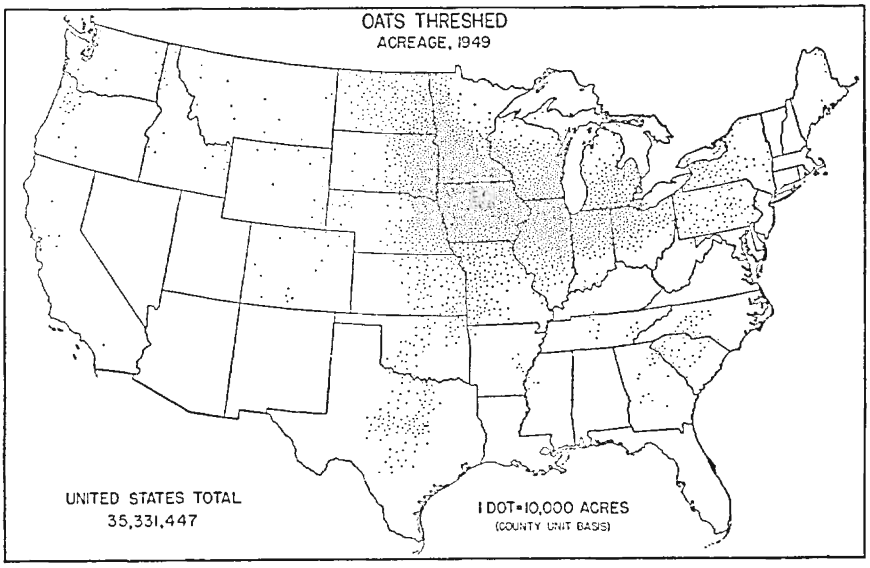


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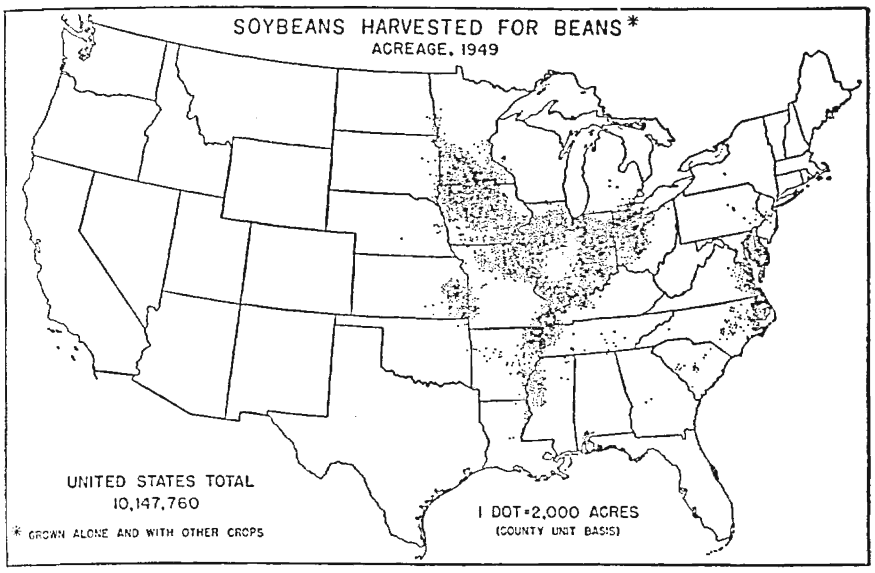


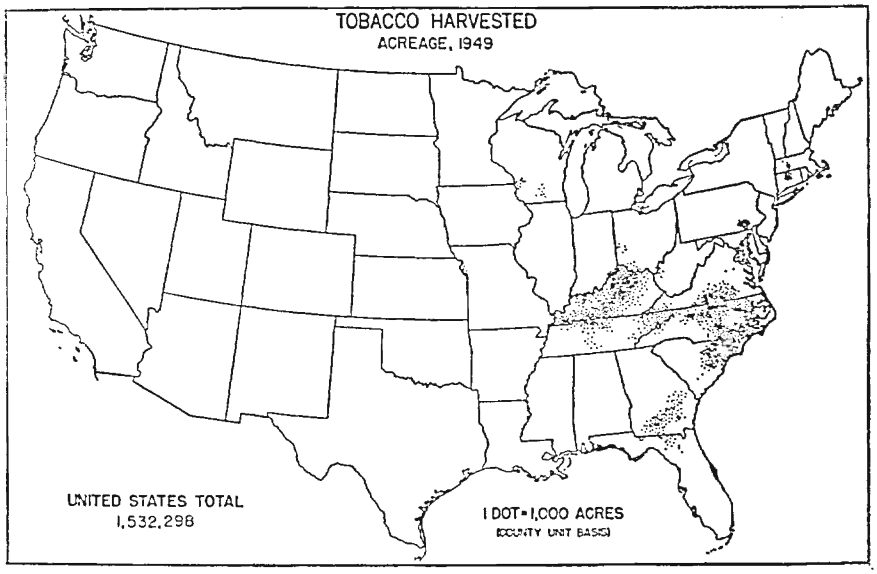


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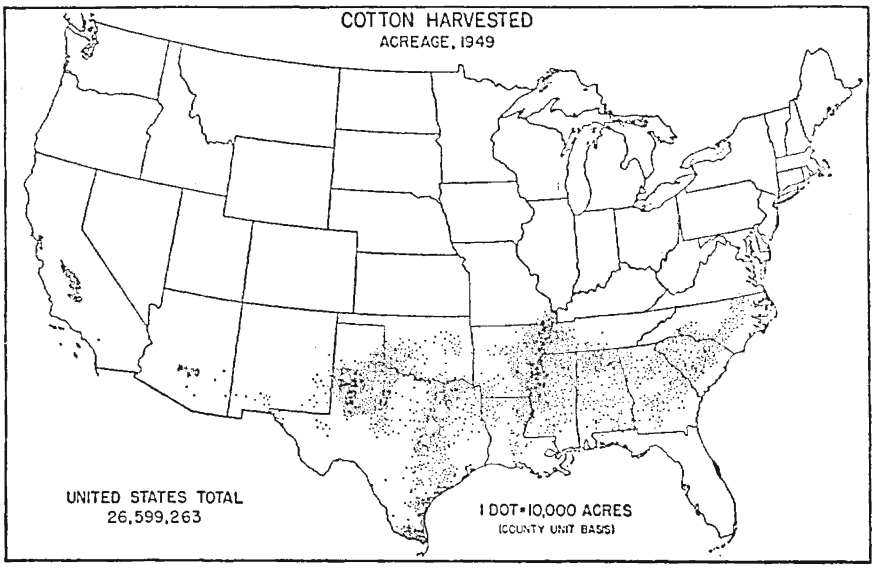


FIGURE 3. (*Continued*)

market conditions and yields turns out correctly, he will pack and sell as planned. But his market estimates could be wrong. The weather could be unfavorable.

Aside from such short-run adjustment problems, it takes long periods to change materially the production of some commodities. Fruit groves are planted years in advance of their coming into production. The market situation may change during this period. The expansion of milk production is a slow process. Once investment is made in buildings, equipment, and the herd, changes are very difficult and expensive to make.

This inability to adjust quickly to changing conditions creates a high risk element in agriculture. The market for which a long-time production plan is made may be nonexistent when the production is finally available. Changes in consumer tastes may find large amounts of agricultural resources being devoted to the production of something which is no longer so greatly desired. High prices due to shortages of production may destroy the consumer market for that good when it finally arrives in quantity. This relative unpredictability and uncontrollability of production volume helps explain many of the actions which have been taken to strengthen the position of farmers. Some of the implications of this inability to adjust quickly to changing conditions are taken up in the discussion of prices in Chapter 6. The reader should compare the price theory developed there with the practical problems outlined in this chapter.

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CHAPTER FIVE

# The Cost of Marketing

In the preceding two chapters, we have discussed the basic characteristics of the agricultural market. We examined the agricultural production plant —where and under what conditions the raw products are produced. We studied in some detail the consumers of agricultural products—where they are and various factors which affect their consumption habits. The scene is now set for the marketing of agricultural products, since the role of marketing is to move the goods from the producer to the consumer. The focal point of interest in this picture is that of marketing costs.

The difference between the price which the consumers pay for a product and the price the producer of that product receives is generally referred to as the marketing margin. This margin includes all of the costs of moving the product from the point of production to the point of consumption, of any processing which may be undertaken, and of handling at all levels in the marketing machinery. In other words, it represents the cost of performing the various marketing functions and of operating the various agencies which were outlined in Chapter 2.

## THE FARMER'S SHARE

At almost any given time, somebody is investigating the "high cost of marketing." If the times are prosperous and prices high, labor and consumer groups are the active agitators. If the times are depressed and prices low, farmer groups are probing into the situation.

Regardless of the interest group, attention is usually focused on the farmer's share of the consumer's food dollar. An increase in the share is taken as evidence that farmers are the real cause of rising food prices. A decrease in the share is taken as clear proof that middlemen are getting rich off the farmer again.

In an elementary sense, the farmer receives what the consumer pays for food after the various costs of marketing are taken out. This residual amount expressed as a percentage of the retail food dollar is referred to as the "farmer's share." The most widely used source of information on the retail cost of food, the marketing charges, and the farm value is the Agricultural Marketing Service series of the "Market Basket of Farm Food Products." This series reflects the prices and marketing charges of the quantity of food equal to the 1935–1939 average annual purchases of a family of three average consumers.[1]

*Changes in the Farmer's Share Through a Period of Time*

A study of Figure 1 will show that the retail costs of food have varied widely through a period of time and have moved up and down with the general economic health of the country. (We may refer again to Figure 1 in Chapter 3 and recall that the dollar outlay for food moves up and down with the fluctuations in the disposable incomes of consumers.) It also

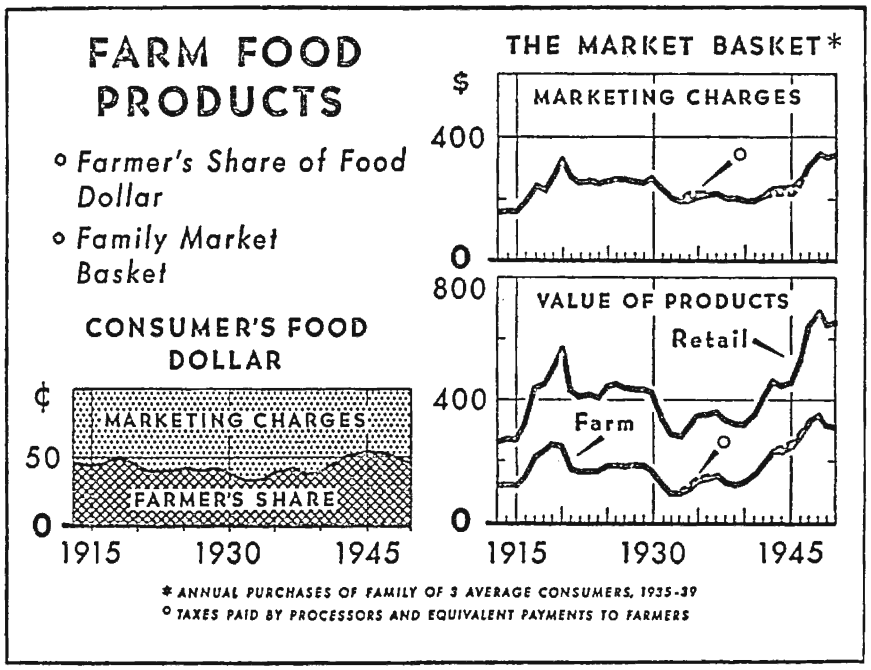


FIGURE 1. *Changes in the farmer's share of the consumer's food dollar showing the relative fluctuations of the retail value, the marketing charges, and the farm value of food. (Courtesy USDA.)*

[1] See R. D. Been, *Price Spreads Between Farmers and Consumers*, USDA Agricultural Information Bulletin 4, 1949.

shows that the farmer's share moves up and down with changes in the amount of the consumer's outlay at the retail level. The share has varied from a low of 32 cents in the depression years of 1932 to a high of 54 cents in the war year of 1945. In other words, when the retail expenditure is reduced, the farmer receives a smaller percentage of the reduced consumer outlay. When the retail expenditure is increased, the farmer receives a larger percentage of the increased consumer outlay.

The basic reason for this relationship is the relatively inflexible nature of the marketing charges. Though it is true that these charges also move up and down with changing business conditions, the change is relatively quite small. Marketing charges are "sticky." As the consumer outlay at the retail level increases, the marketing charges do not increase as much. Therefore, as a percentage of the consumer dollar, marketing charges will decrease and the farmer's share will increase. The reverse situation will be true when the retail expenditure declines. This relationship is illustrated in Table 1.

TABLE 1. *Relationship of Retail Value, Marketing Charges, and Farm Value of Market Basket of Farm Foods in a Period of Low and High Prices*

| | LOW PRICE PERIOD (1932) | HIGH PRICE PERIOD (1948) | PERCENT CHANGE (1932 TO 1948) |
|---|---|---|---|
| Retail cost | $285 | $690 | +142 |
| Marketing charges | 195 | 339 | + 74 |
| Farm value | 90 | 351 | +290 |
| Farmer's share of consumer's dollar | 32¢ | 51¢ | + 59 |

TABLE 2. *Changes in Retail Value, Marketing Charges, and Farm Value of Two Products in a Period of High and Low Prices*

| | LOW PRICE PERIOD (1932) | | HIGH PRICE PERIOD (1948) | | PERCENT CHANGE (1932 TO 1948) | |
|---|---|---|---|---|---|---|
| | PRODUCT WITH SMALL SHARE (BREAD) | PRODUCT WITH LARGE SHARE (BEEF) | PRODUCT WITH SMALL SHARE (BREAD) | PRODUCT WITH LARGE SHARE (BEEF) | PRODUCT WITH SMALL SHARE (BREAD) | PRODUCT WITH LARGE SHARE (BEEF) |
| | CENTS | CENTS | CENTS | CENTS | | |
| Retail cost (lb.) | 7.3 | 24.2 | 14.5 | 73.7 | + 99 | +204 |
| Marketing charges | 6.8 | 13.2 | 11.9 | 20.7 | + 75 | + 57 |
| Farm value | 0.5 | 11.0 | 2.6 | 53.0 | +420 | +382 |
| Farmer's share of consumer's dollar | 7.0 | 45.0 | 18.0 | 72.0 | +157 | + 60 |

This "sticky" nature of marketing charges also helps explain why the farmer's share of some commodities fluctuates so much more than that of others. Generally, the larger the marketing charges which must be subtracted from the consumer's dollar, the greater the percentage change in the farmer's share will be. A study of Table 2 shows the difference in share change of a commodity with a relatively large marketing charge and one with a relatively small marketing charge.

In both of these situations, the change of the share through a period of time and the differences in the change of share among commodities, the change can come about without any change in the physical organization of the marketing system.

*Differences in the Farmer's Share Among Commodities*

Besides the attention which is given to the changes in the farmer's share, the wide variation in the size of the farmer's share among different commodities often draws the fire of investigators. Table 3 gives the market-

TABLE 3. *Marketing Charges and the Farmer's Share of the Consumer's Dollar Spent for Selected Foods, 1952*

| FOOD | PERCENT OF CONSUMER'S DOLLAR | |
|---|---|---|
| | MARKETING CHARGES | FARMER'S SHARE |
| All foods | 52 | 48 |
| Beef | 30 | 70 |
| Eggs | 30 | 70 |
| Pork | 39 | 61 |
| Fluid milk | 41 | 59 |
| Potatoes | 45 | 55 |
| Evaporated milk | 50 | 50 |
| Tomatoes, fresh | 55 | 45 |
| Flour, white | 56 | 44 |
| Cabbage, fresh | 57 | 43 |
| Margarine | 64 | 36 |
| Oranges | 65 | 35 |
| Tomatoes, canned | 80 | 20 |
| Corn flakes | 82 | 18 |
| Bread, white | 85 | 15 |

SOURCE: *Marketing and Transportation Situation*, B.A.E., USDA, January, 1953.

ing charges and farmer's share for several commodities and illustrates this wide variation. For example, the farmer's share of the consumer's dollar spent for beef is more than four times the size of the share received from the sale of bread.

Upon a minute's reflection, however, the reason for these variations becomes obvious. The marketing job for some products is more complex

than for others. Only if all commodities were alike in all respects would the marketing charges and farmer's share be alike. To a large degree, differences in the size of the farmer's share reflect the effect of the product characteristics on the complexity of the marketing functions which must be performed. The major product characteristics which contribute to this difference might be classified as follows:

1. Processing. The more work which must be done in changing the form of the product to satisfy the consumer, the greater the marketing charges will be.
2. Perishability. The marketing of perishables is usually more costly than that of nonperishables. Spoilage is greater. Expensive refrigeration may have to be used both in transportation and in the various stages of the marketing channel.
3. Bulkiness in relation to value. Some products will require more space in both transportation and storage. This would tend to increase cost.
4. Extreme seasonality of production. Commodities which must come to market within a very short time require facilities to handle the peak period of production. These same facilities may be only partially used during the rest of the year. If such commodities are also perishable, increased spoilage costs also will result.

Other factors not attributable to the product itself may also cause some of the differences. Institutional factors such as a high degree of vertical integration or a highly organized system of accurate market information might result in difference in the size of share. The demand by consumers of a large amount of special services in some commodity areas may result in higher costs. Of course, most commodities represent a combination of these factors. It is the rare case where everything else would be the same except perishability or amount of processing and the like. But a re-examination of Table 3 with these factors in mind will aid in explaining many of the differences among the farmer's share of the various commodities. For example, much of the great difference between the beef and bread share referred to before can be attributed to the difference in the amount of processing done; much of the difference between the farmer's share received from the sale of tomatoes and that from potatoes, to the difference in perishability.

## COMPOSITION OF THE MARKETING MARGIN

The marketing margin can be broken down in many ways. Two of the most common classifications are on the basis of specific cost items and on the basis of jobs performed at the various levels in the marketing channel. Tables 4 and 5 break down the marketing margins for several products on these two classifications.

TABLE 4. *Breakdown of Marketing Margins for Farm Foods by Various Services, 1939 (Arranged in Order of Processing Necessary)*

| PRODUCT | RETAILING | WHOLESALING | LOCAL ASSEMBLY | TRANSPORTATION | PROCESSING |
|---|---|---|---|---|---|
| | PERCENT OF TOTAL MARKETING CHARGES | | | | |
| All farm foods | 38.7 | 11.0 | 5.8 | 10.4 | 34.1 |
| Eggs | 34.6 | 26.8 | 27.1 | 11.5 | — |
| Fresh fruits & vegetables | 47.1 | 14.0 | 9.7 | 29.2 | — |
| Chicken | 42.8 | 12.6 | 16.8 | 6.7 | 21.1 |
| Fluid milk | ——64.9—— | | 13.7 | — | 21.4 |
| Butter | 36.1 | 21.6 | 9.8 | 4.5 | 28.0 |
| Cheese | 46.9 | 21.8 | 3.9 | 2.3 | 25.1 |
| Meat | 49.0 | 11.8 | — | 8.8 | 30.4 |
| Flour | 29.0 | 10.5 | 5.5 | 21.1 | 31.9 * |
| Canned beans | 26.5 | 14.9 | 4.0 | 2.3 | 51.4 |
| Prepared cereal | 25.5 | 8.1 | 2.8 | 6.3 | 57.3 |
| Bakery products | 18.8 | 11.8 | 0.9 | 2.1 | 66.4 |

* Includes 3.1 percent of terminal storage.

SOURCES: *Series of Margins and Costs Studies by Commodities,* USDA Technical Bulletins 936, 932, 934, 969, 1946–48.

TABLE 5. *Breakdown of Marketing Margins for Farm Foods by Various Cost Items, 1939 (Arranged in Order of Processing Necessary)*

| PRODUCT | WAGES,* SALARIES | TRANSPORTATION | PROFITS | ADVERTISING | CONTAINER, WRAPPER, MATERIAL COSTS | OTHER EXPENSES † |
|---|---|---|---|---|---|---|
| | PERCENT OF TOTAL MARKETING CHARGES | | | | | |
| All farm foods | 40.2 | 10.4 | 8.8 | — | 6.5 | 34.1 |
| Eggs | 43.6 | 11.5 | — | — | 16.5 | 28.5 |
| Fresh fruits & vegetables | 38.2 | 29.2 | — | — | 8.3 | 24.3 |
| Chicken | 46.6 | 6.7 | — | — | 15.4 ‡ | 41.3 |
| Fluid milk | 58.4 | — | 7.4 | 2.0 | 12.5 | 19.7 |
| Butter | 36.1 | 4.5 | 6.2 | — | 8.9 | 44.3 |
| Cheese | 44.4 | 2.3 | 13.6 | — | 8.2 | 31.5 |
| Meat | 53.1 | 11.2 | — | — | — | 35.7 |
| Flour | 30.8 | 21.1 | 10.8 | 5.7 | — | 31.6 |
| Canned beans | 34.7 | 2.4 | 11.4 | 4.8 | 19.2 | 27.5 |
| Prepared cereals | 28.8 | 6.3 | 12.0 | 10.0 | — | 42.9 |
| Bakery products | 40.9 | 2.6 | 9.8 | 4.3 | 6.4 | 36.0 |

* Exclusive of wages and salaries in transportation agencies.

† Includes taxes, depreciation, interest, etc., and in cases where not broken out separately, profits, advertising, container costs, etc.

‡ Feed charges of live chickens while held for processing.

SOURCES: *Series of Margin and Costs Studies by Commodities,* USDA Technical Bulletins 936, 932, 934, 969, 1946–48.

The amount of the margin which can be attributed to processing, of course, varies widely. Fresh fruit and vegetables have no processing costs, while bakery products have a very large processing bill. However, for all of the products the portion of margin absorbed by retailing stands out because of its consistently large size. For all food, retailing accounts for nearly two-fifths of the total margin. On the other hand, the amounts taken by the wholesaling operations and by the agencies involved in the country assembly of products are relatively small.

When the margin is broken down by various cost items, another fact becomes clear. Wages and salaries account for the largest part of the total margin. Two-fifths of the marketing margin of all foods can be attributed to wages and salaries. In all of the listed commodities, the importance of this item of cost is illustrated.

There are always those who immediately will question data which are not "up-to-date." However, various margin studies in recent years have merely confirmed the results of these earlier studies. It appears that while there might be minor changes with the passing of time, the relative importance of the various items remains unchanged.

TABLE 6. *Breakdown of Total Marketing Margins for Meat, 1932, 1939, and 1947*

| | 1932 | 1939 | 1947 |
|---|---|---|---|
| | PERCENT OF TOTAL MARGINS | | |
| Breakdown by services: | | | |
| Retailing | 50.0 | 49.0 | 44.9 |
| Wholesaling | 12.1 | 11.8 | 11.6 |
| Processing | 30.3 | 30.3 | 37.1 |
| Local assembly | 7.6 | 8.9 | 6.4 |
| Breakdown by cost items: | | | |
| Wages and salaries | * | 53.2 | 59.5 |
| Transportation | * | 11.2 | 8.9 |
| Other costs | * | 35.6 | 31.6 |

* Not available.

SOURCE: Kathryn Parr, *Farm to Retail Margins for Livestock and Meat*, B.A.E., USDA, 1949.

A study which compared the composition of the marketing margin for meat in a low price period, 1932, a "normal period," 1939, and a high price period, 1947, found the same relative importance in the breakdown of the margin for all periods. Table 6 shows that over the fifteen-year period and under widely different economic conditions, retailing was the most costly service performed, and that wages and salaries made up the largest single item of cost.

Table 7 summarizes the results of various other recent studies. These products involved very little if any processing. Local assembly costs in some instances cover the costs of sorting and packaging the product for shipment. Here, again, the large amount of the share taken for retailing stands out. The fact that the job of retailing is relatively so expensive proves nothing about its relative efficiency. To a considerable extent, the expense of retailing merely reflects the complexity of the job done. A retailer performs all of the functions of marketing in some degree.

TABLE 7. *Breakdown of Marketing Margins by Various Services for Selected Commodities*

| PRODUCT AND AREA | RETAILING | WHOLESALING | LOCAL ASSEMBLY | TRANSPORTATION |
|---|---|---|---|---|
| | PERCENT OF TOTAL MARKETING MARGIN | | | |
| Apples sold in Pittsburgh, Pa., 1949–50, from: | | | | |
| Pacific northwest * | 30.8 | 11.3 | 30.1 | 27.8 |
| Eastern states * | 43.8 | 11.2 | 6.9 | 38.1 |
| Appalachian region † | 43.6 | 11.5 | 6.4 | 38.5 |
| Apples sold in Chicago, Ill., 1947–48, from: | | | | |
| Washington state ‡ | ——48.5—— | | 19.4 | 32.1 |
| Fresh vegetables sold in Calif.: § | | | | |
| Asparagus from Calif., 1949 | 51.1 | 16.5 | 5.1 | 27.3 |
| Celery from Calif., 1948–49 | 54.5 | 22.2 | 9.4 | 13.8 |
| Wisconsin eggs sold in: ‖ | | | | |
| A southern city, 1949 | 21.4 | 41.8 | 36.8 | ** |
| An eastern city, 1948 | 25.4 | 40.6 | 34.0 | ** |
| Western turkeys sold, 1948–49, to: ¶ | | | | |
| New York | 42.3 | 13.3 | 22.0 †† | 22.4 |
| Chicago | 49.8 | 4.7 | 25.1 †† | 20.4 |
| San Francisco | 50.2 | 14.7 | 29.3 | 5.8 |

* H. W. Bitting and H. T. Badger, *Marketing Charges for Apples Sold in Pittsburgh*, USDA Agricultural Information Bulletin No. 47, 1951.

† H. H. Reizenstein and H. W. Bitting, *Farm to Retail Margins for Appalachian Apples*, USDA Agricultural Information Bulletin No. 44, 1951.

‡ H. H. Reizenstein and H. W. Bitting, *Farm to Retail Margins for Washington Delicious Apples Marketed in Chicago*, USDA Agricultural Information Bulletin No. 6, 1949.

§ J. Foytik, *California Celery—Marketing Channels and Farm to Retail Margins* and *California Asparagus—Marketing Channels and Farm to Retail Margins*, California Mimeographs 117 and 116, 1951.

‖ W. P. Mortenson and T. F. Graf, *Marketing Eggs in a Southern City*, Wisconsin Mimeograph, and *Marketing Eggs in the Lake States*, Wisconsin Bulletin 168, 1950.

¶ J. O. Gerald, *Farm to Retail Margins for Marketing Western Turkeys*, USDA Agricultural Information Bulletin No. 5, 1949.

** Transportation costs are largely included in the wholesaling and assembly costs.

†† Includes dressing expenses.

*Labor Costs in Marketing*

The large portion of the total marketing margin which is attributable to labor costs makes this item one of the focal points in any effort to reduce the costs of the marketing process. Not only in the total figures are labor costs high, but at each level of the marketing process they are the major item of expense. In a study of ninety-two grain elevators, 43 percent of the total margin taken went for wages and salaries. Of the margin taken by meat packers, wages and salaries accounted for nearly 47 percent. Nearly 50 percent of the total margin taken by eight cooperative egg and poultry marketing associations was needed to pay labor costs; 38 percent of citrus packing house expenses also went for this item. Of the total margin of 138 meat markets, 59 percent was needed to pay for labor.[2] Such examples could be multiplied many times, but all would demonstrate the major importance of wages and salaries in the marketing margin at all levels of marketing.

It should be no surprise that marketing margins will tend to increase or decrease as the wage bill in marketing moves up and down. This relationship is illustrated in Figure 2. As the unit labor cost has increased, up have gone the total marketing charges.

*Profits in Marketing*

No discussion of the composition of the marketing margin would be complete without some reference to the profits taken by the various agencies of the marketing system. Profits long have been used as a public "whipping boy" not only by critics of marketing, but in all other fields of economic endeavor.

It has become popular to treat profits as a "residual"—something which is nice to have, but which can be reduced or eliminated without any effects upon the business system. This ignores the function of profits in an economy such as ours.[3]

Modern accounting procedures often include the return to both capital and management under the accounting breakdown of profit. Profits in this

[2] The studies from which these examples were taken in the order mentioned are: E. G. Byer, G. B. Wood, and G. S. Abshier, *A Financial Business Analysis of Indiana Grain Elevators,* Indiana Bulletin 547, 1950; G. M. Lewis, *Financial Results of the Meat Packing Industry,* 1950, American Meat Institute, Mimeograph, 1951; H. E. Ratcliffe, *Cooperative Marketing of Eggs and Poultry in Ohio,* Farm Credit Administration, USDA Bulletin 59, 1950; J. K. Samuels and G. L. Capel, *Citrus Packinghouse Costs in California,* Farm Credit Administration, C-138, 1951; K. Bjorka, *Marketing Margins and Costs for Livestock and Meat,* USDA Technical Bulletin 932, 1947.

[3] We are not here concerned with profits as developed in the strict theoretical sense. Those who wish to explore that area should turn to appropriate theory sources.

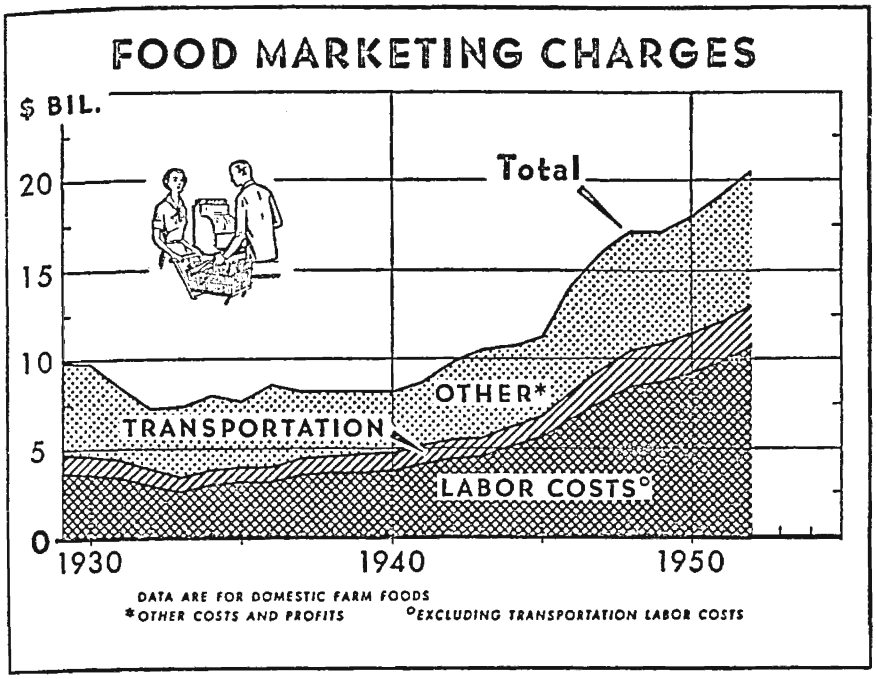


FIGURE 2. *The composition of food marketing charges showing the importance of changing labor costs. (Courtesy USDA.)*

sense are as necessary in attracting capital for the maintenance and growth of a company as wages are necessary to attract workers.

Profits are reported on varying bases. Most businesses like to present their earnings on the basis of a percentage of total sales. This permits a large dollar profit to appear infinitesimally small, especially if the sales volume of the firm is very large. For example, the meat packing industry earnings in 1950 were 95 million dollars, but this was only 1.1 cents for each dollar of sales.[4] This small figure can then be used to emphasize how unimportant profits are in the consumer cost of meat. It is possible that this de-emphasis of the importance of profits on the part of business has contributed to the widespread feeling of the unnecessary nature of profits.

Another way of presenting profits is on the basis of net worth. This tends to give the more valid picture of returns on the capital which is at work in the company. It is on this basis that the earnings are shown in Table 8. The data in this table are for the World War II and immediate postwar period. This was a period when complaints about exorbitant profits were commonplace. The earning records for these various food enterprises

[4] Lewis, *op. cit.*

TABLE 8. *Operating Profit of Various Types of Companies, 1940 to 1950*

| YEAR | 8 BAKING COS. | 8 GRAIN MILL PRODUCTS COS. | 11 MEAT PACKERS | 5 CANNING COS. | 1 DAIRY PRODUCTS CO. | 43 FOOD PROCESSING COS. | 8 RETAIL FOOD CHAINS | 4 TOBACCO COS. | LEADING MFR. COS. |
|---|---|---|---|---|---|---|---|---|---|
| | | | | PROFIT RATE ON INVESTMENT * | | | | | |
| 1940 | 7.2 | 8.2 | 5.0 | 6.3 | 8.4 | 6.5 | 9.4 | 14.0 | 10.3 |
| 1941 | 6.6 | 8.6 | 7.6 | 11.1 | 9.7 | 8.5 | 9.8 | 12.3 | 12.4 |
| 1942 | 10.2 | 9.0 | 7.3 | 7.0 | 9.6 | 8.3 | 7.3 | 10.9 | 10.1 |
| 1943 | 10.6 | 8.8 | 7.3 | 7.3 | 8.6 | 8.0 | 7.4 | 10.0 | 9.9 |
| 1944 | 9.3 | 10.1 | 6.6 | 8.5 | 8.5 | 7.9 | 7.9 | 8.8 | 9.6 |
| 1945 | 10.0 | 9.4 | 5.9 | 9.2 | 9.7 | 7.9 | 7.8 | 8.4 | 9.3 |
| 1946 | 19.7 | 11.8 | 10.3 | 16.6 | 14.3 | 12.7 | 18.1 | 10.0 | 12.1 |
| 1947 | 13.6 | 16.4 | 11.6 | 11.5 | 11.1 | 12.3 | 17.2 | 10.3 | 17.1 |
| 1948 | 17.4 | 12.4 | 5.2 | 8.8 | 9.9 | 8.6 | 15.2 | 11.0 | 18.2 |
| 1949 | 13.1 | 11.1 | 3.5 | 5.3 | 11.9 | 7.7 | 14.4 | 10.4 | 13.8 |
| 1950 | 12.9 | 10.9 | 5.6 | 12.4 | 10.9 | 9.1 | 13.0 | 9.7 | 17.1 |

* Less provisions for taxes.

SOURCE: *Marketing and Transportation Situation*, USDA, B.A.E., October, 1951, for food processing companies, and National City Bank of New York for manufacturing. (These latter rates are reported on the basis of net worth which means that the rates here are somewhat higher than those calculated on the basis of investment.)

do not seem terribly out of line. Excessive profits of the marketing and processing firms cannot be logically used as a major cause of excessive costs. On the other hand, neither can the apparent reasonableness of the earning record be used as the basis for arguing that the profit levels are "correct" and that any lower level would invite disaster.

### *A Basic Reason for a Large Marketing Margin*

Other parts of the marketing margin, such as transportation and retailing, will be discussed in detail in subsequent chapters. However, some general conclusions about the size of the marketing bill can be proposed at this time. Even with a perfectly functioning and highly efficient marketing machinery, the total costs would still be great. The fundamental reasons for this have been outlined in the two preceding chapters.

The physical arrangement of the production and consumption pattern of this country are responsible for much of the costs of marketing. The bulk of the food production is concentrated within a relatively small area. The major areas of consumption are also concentrated within a limited area. These two areas are some distance from each other. Foods must travel long distances. Losses from spoilage and deterioration are great.

Also fundamental to high marketing costs is the principle of consumer supremacy. The consumer's wants will be satisfied as long as he will pay for them. Habits and tastes vary, as we have discovered. Consumers desire a considerable amount of services. Matching production to such a situation will always be an expensive process.

## REDUCTION OF MARKETING COSTS

### *Inflexibility of Marketing Margins*

We have seen how the relatively stable nature of the marketing margin results in an exaggerated fluctuation in the farmer's share as the retail prices change. Not only is the total margin relatively inflexible, but the charges taken by each level of the system are relatively sticky. To many, this inflexibility of the margin is one of the greatest shortcomings of our marketing system.

There are some basic reasons why marketing costs do not move up and down easily and proportionately with the change in dollar value of the goods handled. Many of the costs of performing a particular marketing function are related to the physical volume handled rather than the dollar value of that volume. This is true of both the processing and nonprocessing establishments of the marketing channel. In a stockyard, for example, the same labor force in the yard and in the offices must be employed to handle

1,000 hogs on a day they are sold at $25 as on the day they bring $10. It takes substantially the same plant and labor outlay to pack fruit at a time when the value is high as when the value is low. It takes the same amount of transportation space to haul 1,000 cases of eggs at 25 cents a dozen as at 50 cents. This situation results in many marketing charges being levied on a physical unit basis such as per bushel or per animal, instead of on a percentage of dollar volume. Such charges become more difficult to adjust to the changing value of the products handled.

The relative degree of competition or monopoly control in the marketing structure also has a bearing on inflexible margins. Increased unionization of labor will probably lead to greater rigidity both in wages and employment practices. Though probably a more flexible cost structure in the marketing system would be desirable, there seems to be little reason to believe that much improvement in this area will be made.

*The Farmer's Share as a Measure of Marketing Efficiency*

It should now be evident that changes in the farmer's share over a period of time are not an adequate indicator of changes in marketing efficiency. In fact, there is reason to believe that in very prosperous times when the share is relatively large the machinery may be less efficient than in depressed times when the share is small. Prosperous periods often encourage poor management and organization, since large profits come easily. Hard times furnish the impetus to operate as efficiently as possible. Neither is the difference in the size of share among the various commodities an indicator of relative efficiency. Rather in most cases it merely reflects the complexity of the job which must be done in marketing the product.

It is doubtful whether the statistics of the farmer's share merit the attention that they receive. The important thing is not the size of the share, but rather the total return which is received by agricultural producers from the sale of their products. Higher marketing costs and a more prosperous agriculture are compatible ideas. It is very probable that as the standard of living rises, increased demands for more processing and marketing services will increase marketing costs. In some instances, maybe enough is not being spent to market the product to its best advantage. This situation could be true regardless of the size of the farmer's share. Businessmen in all fields are continually attempting to discover new ways of attracting and influencing the consumer. In a sense, they are always asking the question, "Does marketing cost enough?" Again we must recall what was said in Chapter 1 concerning marketing efficiency. It is not a matter of low dollar costs alone but rather of getting the marketing job done with the best combination of resources. And the end product of the marketing job

is the movement of goods into consumption with top priority given to consumer satisfaction.

*Opportunities for Reducing Costs*

Though the knowledge of the size and composition of the marketing margin is not, of itself, a measure of efficiency, it can be helpful to the study of marketing efficiency. Cost and margin data help indicate areas where efficiency problems exist. Such data when properly coupled with the functions performed may furnish a comparison of the relative efficiency of various organizations and methods.[5]

The breakdown of the margin on the basis of services performed at the various levels suggests that one of the more fruitful areas of effort to reduce margins may be in the retailing operation. In the past, many of the efforts to reduce costs have been directed toward wholesaling and local assembly. The breakdown of the margin shows that these areas are of relatively small importance in relation to the total. The breakdown of the margin on the basis of cost items suggests that the greatest increases in efficiency might be made in attacking the problem of labor utilization.

In reducing marketing costs, it is generally recognized that little can be gained from a blanket, across-the-board approach. Simply because the costs of retailing are high does not mean there is some panacea to be used in securing substantial savings. A general reduction in wage rates is an unrealistic approach to the problem of high labor costs. The problem is rather the tedious one of securing a saving here and improving a special operation there. A large number of small contributions will be the way progress is made.

One major approach toward increased efficiency of the marketing system is the determination of the optimum number and size of firms to carry on the job. Much work has been done to ascertain the economies of scale of various types of business. For example, a study on citrus packing house costs found that as the volume packed increased from under 200,000 boxes to over 600,000 boxes, total cost fell from 94 to 83 cents per box. It suggested that substantial savings could be realized by combining four small packing houses into one large one.[6] Integration of some of the functions and agencies into one business organization often is offered as a technique to reduce costs. The large food chains which operate processing and wholesaling divisions as well as their retail outlets are an example of an attempt to reduce margins through integration. Though many studies

[5] An evaluation of the usefulness and limitation of cost and margin research can be found in the report of the Marketing Research Workshop on *Marketing Margins and Efficiency*, USDA, Agricultural Research Administration, 1950.

[6] Samuels and Capel, *op. cit.*

have pointed out the possible cost savings through increased size and fewer and integrated firms, there has been very little work toward determining the optimum number of firms for effective competition. In the modern business world there may have to be some compromise between securing the maximum economies of scale and maintaining an effective competitive structure. Undiscriminating worship at the shrine of the economies of scale may bring still greater costs by fostering weak and impotent competition.

Another major approach toward increased efficiency is in the improving of the operational methods and layouts of individual firms. The end product of such improvements can be the more efficient utilization of labor. The same study on citrus packing house costs reported that the number of men needed for operation could be reduced through the use of proper machinery. A study of the operations of the receiving rooms in milk plants concluded that with an improved arrangement, the job which previously had taken four or more men could be done either with one or two men.[7] Through the proper training of peelers in tomato canning factories it was possible to increase productivity 20 percent.[8] Examples of possibilities of improving the way labor is used, the handling of materials, and the layout of plants are numerous.

That efficiency of labor with resulting reduction in costs can be improved in marketing is demonstrated by Figure 2. Unit labor costs have not risen as much as have wage rates. Hourly earnings increased 125 percent from 1940 to 1950; unit labor cost increased 100 percent. This means that the output per man of the marketing labor force has been increased.

TABLE 9. *Changes in Man-Hours Expended Per Unit of Output, Selected Industries*

| INDUSTRY | PERCENT CHANGE 1949 FROM 1939 |
|---|---|
| Flour and grain mill products | +20.5 |
| Condensed and evaporated milk | + 2.8 |
| Sugar | + 1.4 |
| Beet sugar | − 4.3 |
| Confectionery | −14.1 |
| Malt liquors | −20.2 |
| Canning and preserving | −21.7 |
| Ice cream | −27.7 |

SOURCE: Bureau of Labor Statistics, U. S. Department of Labor.

[7] C. E. French, G. B. Wood, and V. C. Manhart, *Labor Utilization in Receiving Rooms of Indiana Milk Plants*, Indiana Bulletin 576, 1952.

[8] L. J. Haverkamp and L. S. Hardin, *Simplifying Tomato Canning Factory Operations*, Indiana Bulletin 528, 1948.

Table 9 shows the changes in labor productivity which occurred during the ten-year period, 1939 to 1949. This illustrates the sharp differences which exist among the different industries. The flour and grain mill firms actually were using 20 percent more labor per output unit in 1949 than in 1939. On the other hand, the ice cream industry had increased its labor productivity by 28 percent.

It can safely be concluded that the opportunities for increasing the efficiency of the marketing machinery have just begun to be explored. Such work may not result in lower marketing margins if additional marketing services are demanded. But it may allow these additional services to be supplied without any marked increase in the margin.

There is nothing on the horizon which promises any drastic improvement and lower costs in marketing. There are no cure-alls for high costs. The basic job is too large and complex. But there is little reason to be more pessimistic about continued gradual improvement in marketing than in any other segment of the economy.

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*Part II*

# SOME FUNCTIONAL PROBLEMS

CHAPTER SIX

# The Exchange Function—Price Discovery

The exchange functions of marketing, buying and selling, are the heart of marketing. As goods move through the many hands before reaching the final user, title changes several times. Each time title changes, a price must be decided upon. This means that pricing is an integral part of marketing. Price analysts claim that marketing is an important branch of the study of prices. Marketing people claim that pricing is a major branch of the study of marketing. Regardless of viewpoints, the study of marketing and of prices go hand in hand. One really cannot adequately understand marketing without some grasp of the fundamentals of pricing.

It is the objective of the next few pages to present briefly some of the basic concepts which are needed for price understanding. For many of you, this will be merely review. For those of you who have not come in contact with these concepts before, more careful study will be appropriate.

## PRICES IN A COMPETITIVE ECONOMY[1]

The operation of any modern economic organization in which specialization of production exists requires that certain instructions be given. Instructions must be given as to how the factors of production—land, labor, capital, and management—are to be used. What should be produced and how much? As we have already mentioned, consumers have the final word in giving these directions by their indications of what will be consumed and in what amounts. The people selecting and channeling goods through the marketing system must be told what is expected of them. Too, con-

[1] The assumptions of competition along with an appraisal of the degree of competition present in the marketing of agricultural products will be discussed in the next chapter.

sumers must have information on the relative costs that producers incur in supplying them with different goods so they can make their decisions on how to allocate their limited incomes on a basis of more than sheer desire. In a competitive economy the pricing machinery is expected to transmit these orders and directions. Briefly, then, fluctuating competitive prices have the following three major jobs to perform:

1. They are to guide and regulate production.
2. They are to guide and regulate consumption.
3. They are to guide and regulate the distribution of goods both over a period of time and from place to place.[2]

Economies organized in some other fashion—such as socialistic and communistic organization—still must find some way to give direction to the workings of the system. The area of disagreement is not over what orders are necessary, but rather over how and who should give them.

If a competitively functioning price system is allowed to give the direction, it has the advantage of being impartial. The idea of "fair treatment" is left to the composite judgment of the market place rather than to the decisions of individuals in positions of political power. Such a system of direction also has the advantage of being in continuous operation—there is a continuous adjustment to changing conditions. This is in contrast to the sluggish "after-the-fact" type of direction which usually occurs when the direction job is delegated to various public agencies.

The heart of price formation under competition is the supply-and-demand analysis. There is probably no more overworked and misunderstood phrase in economics than the "law of supply and demand." To some it is a form of magic or divine guidance which is invoked to explain away any major problem or dilemma. To others it is something which can be used or ignored depending upon the desires of the moment. It is to these fundamental ideas of supply and demand that we shall now apply ourselves.

### *The Meaning of Demand*

Demand is a schedule of different quantities of a commodity which buyers will purchase at different prices at a given time and place. The *law of demand* merely formalizes the logical relationship between quantities taken and prices. The lower the price the more will be purchased; and conversely, the higher the price, the less will be purchased.

[2] Boulding develops a very forceful illustration of the control functions of prices. He uses the analogy of the flow of water in and out of a tank. Production is the flow coming in; consumption, the flow going out. Price is the float system which equalizes the rate of intake and outgo. See K. E. Boulding, *Economic Analysis*, 2nd ed. (New York, Harper & Brothers, 1948), p. 117.

Table 1 gives a hypothetical demand schedule of prices and quantities which might exist for corn at any given time and place. Of course, for any one time period a definite amount of corn will be purchased at the stated price—say 1,750 million bushels at $1.30. But the demand schedule shows what amounts would have been purchased if the price had been different.

TABLE 1. *Hypothetical Demand Schedule for Corn*

| PRICE PER BUSHEL | AMOUNT PURCHASED (MILLION BUSHELS) |
|---|---|
| $1.60 | 1,500 |
| 1.50 | 1,570 |
| 1.40 | 1,660 |
| 1.30 | 1,750 |
| 1.20 | 1,900 |
| 1.10 | 2,030 |
| 1.00 | 2,190 |
| .90 | 2,400 |

Figure 1 is the graphic presentation of the demand schedule given in Table 1. This is the *demand curve* for corn. If the law of demand is valid, the demand curve will always slope downward and to the right on a graph similar to Figure 1.

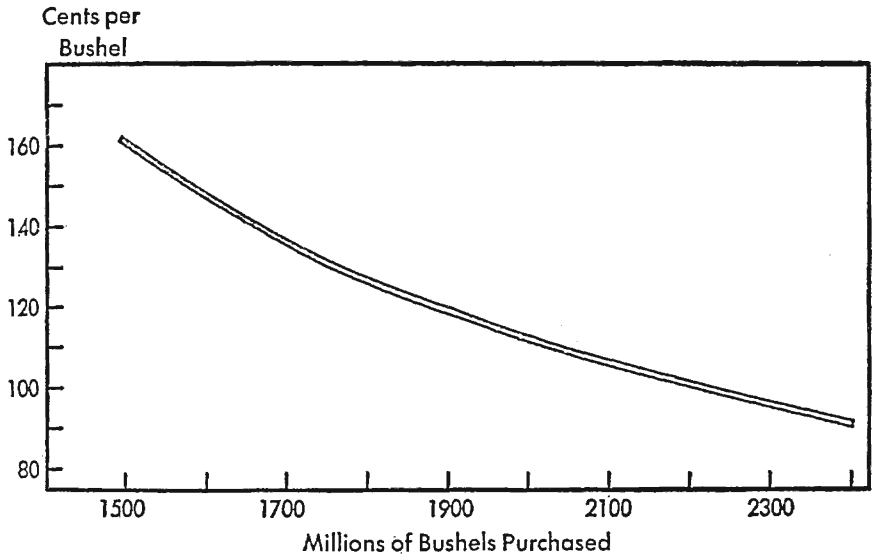


FIGURE 1. *Hypothetical demand curve for corn.*

The demand curve in Figure 1 and the demand schedule in Table 1 both illustrate the nature of the relationship between quantity and price as it is established by prospective buyers. *If* the price were $1.60, 1,500 million

bushels would be purchased; *if* the price were $1.40, 1,660 million bushels would be purchased and so on for any other possible prices assuming that all other things remained unchanged. The demand schedule and curve do not indicate what *the* price and quantity are but only what the effect of different prices will have on the quantity purchased. *The* price which will exist has not yet been established and demand alone cannot establish it.

Several important points, then, must be kept in mind if the idea of demand is to be used correctly. First, it is a series, or schedule, of amount-price relationships. To forget this will lead often to the very common error of associating a price change or a consumption change alone with demand.

Secondly, demand indicates the differing amounts that will be purchased at differing prices, and not simply the amounts needed by purchasers. The demand which is important in marketing is what is often termed *effective* demand. Effective demand is the desire of the consumer for the commodity backed up by purchasing power. Effective demand, then, is *the quantity* that would be *purchased* at the existing price. The people of China both need and desire many things—more rice, better clothing, better homes, and so on. However, the Chinese demand for these things is very limited, since they do not have the purchasing power to make their needs and wants effective. The pertinent marketing question is always, "How much will be bought at a price?" and not, "How much will be needed or desired?"

*The Meaning of Supply*

Supply is a schedule of differing quantities which will be offered for sale at different prices at a given time and place. The *law of supply* is simply the logical relationship which exists in these circumstances. The higher the price, the more will be offered for sale; the lower the price, the less will be offered for sale. While demand indicates the relationship between quantity and price from the buyers' viewpoint, supply indicates a similar relationship from the sellers' viewpoint.

As we did for demand, we can make a *supply schedule* of quantities and prices and from this plot a *supply curve*. This is illustrated in Table 2 and Figure 2. Here, too, it must be remembered that at any one time and place only one point on this curve represents the actual situation. But the curve presents what would be the effects of different prices on amounts offered. If the law of supply is valid, the supply curve will always slope upward and to the right on a graph which is similar to Figure 2.

Even more than in the case of demand, common usage has confused the meaning of supply. It is a commonly accepted practice to label changes

in production as changes in supply. For example, the amount of hogs available today on the market is widely referred to as the supply available. To be realistic, we must accept this terminological confusion, but we should keep clearly in mind just what is meant. When supply is used in the economic sense, it always represents a series of price-quantity relationships.

TABLE 2. *Hypothetical Supply Schedule for Corn*

| PRICE PER BUSHEL | AMOUNT OFFERED FOR SALE (MILLION BUSHELS) |
|---|---|
| $1.60 | 2,030 |
| 1.50 | 2,000 |
| 1.40 | 1,980 |
| 1.30 | 1,940 |
| 1.20 | 1,900 |
| 1.10 | 1,860 |
| 1.00 | 1,790 |
| .90 | 1,700 |

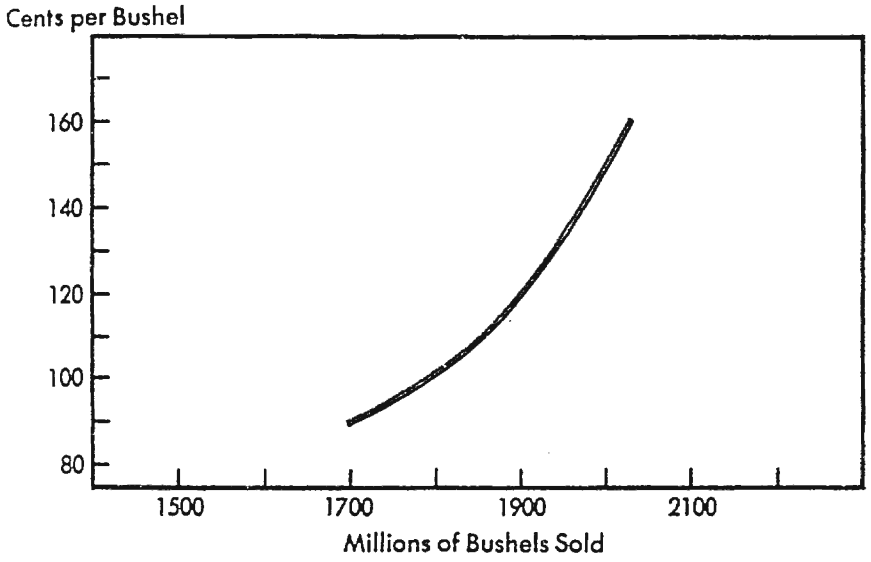


FIGURE 2. *Hypothetical supply curve for corn.*

Time is a very important consideration in supply analysis. One should remember that supply exists at a *given time*. These given time periods can be of different lengths usually designated as the very short run, the short run, and the long run.

The major limitation on supply for the very short run is the existing quantity of goods which is already produced and on hand. Since this stock of goods exists, costs which have been previously met in its production

should not influence price. However, replacement costs and storage costs may influence the seller's judgment and therefore influence the supply schedule.

It is the interrelationship with future time that brings cost into the supply picture. When the given time period is future time, analysts usually consider two additional periods, the short run and the long run. The short run is that time during which goods can be produced only with existing production facilities. The long run refers to that time during which the production facilities themselves may be expanded or contracted. In the short run the cost of the existing facilities is not an element influencing the seller's decisions with respect to supply. In the long-run period, however, the costs of all things used in production enter into the determination of supply.

Since the supply schedule of amounts to be produced refers to a period involving the passage of time, it must take into consideration the time necessary to initiate and complete the production process. For some commodities like broilers, this may be only a period of weeks; for others like cattle, it may be a period of several years. And as we shall point out later and as is obvious from the preceding discussion of time and cost, the supply curve for the same commodity will be different for the different periods of time under consideration.

The time element greatly complicates the analysis of agricultural supply. Unwary observers who notice that large receipts on today's market move at lower prices, or that a large crop brings lower average prices, conclude that the law of supply is not valid. However, these situations point up the problem of determining the proper time lag between the price stimulus and the quantity response. High livestock prices on the market today will result in larger receipts one and two days later because of the time necessary to initiate the shipment from the farm. The proper supply schedule in this instance would probably be one which related today's prices with receipts two days later. The hog production coming to market during the fall months is in response to conditions which existed far enough in the past that hog producers changed their breeding plans. The supply schedule in this case would relate current prices with the level of production forthcoming at least twelve months later.

*The Equilibrium Price*

The forces at work on the buyers' side and the forces at work on the producers' side have often been referred to as the two blades of a scissors. As it takes both blades to cut effectively, so also must both demand and supply be considered in the determination of a price. Table 3 shows both

TABLE 3. *Hypothetical Demand and Supply Schedules for Corn*

| AMOUNT PURCHASED (MILLION BUSHELS) | PRICE PER BUSHEL | AMOUNTS OFFERED FOR SALE (MILLION BUSHELS) |
|---|---|---|
| 1,500 | $1.60 | 2,030 |
| 1,570 | 1.50 | 2,000 |
| 1,660 | 1.40 | 1,980 |
| 1,750 | 1.30 | 1,940 |
| 1,900 | 1.20 | 1,900 |
| 2,030 | 1.10 | 1,860 |
| 2,190 | 1.00 | 1,790 |
| 2,400 | .90 | 1,700 |

the demand schedule of Table 1 and the supply schedule of Table 2. The question is what will be the price of corn, given these two sets of conditions. As we run down the list of prices we find that at $1.20 per bushel, buyers will take 1,900 million bushels. At this same price sellers will produce and offer for sale 1,900 million bushels. At $1.20 buyers will take all that sellers will offer. There will be no unsold corn—the market will be cleared. This, then, will be the price which will be established if the forces of competition are allowed to function. This is the equilibrium price—the point where demand and supply are equal. Figure 3 graphically presents the same picture. Where the demand (d-d) and supply (s-s) curves intersect, (p) is the equilibrium price.

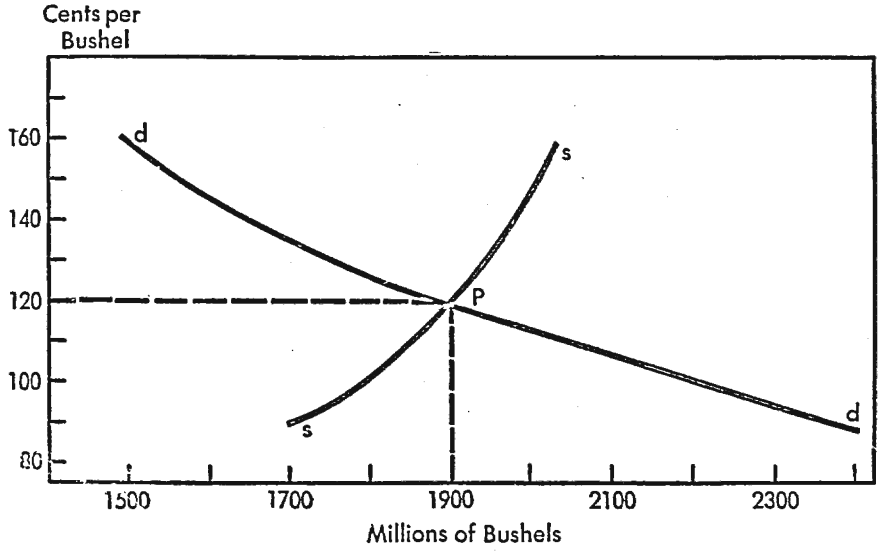


FIGURE 3. *Hypothetical supply and demand curves for corn, illustrating the equilibrium price.*

Why must the price come to rest at $1.20 in this illustration? Suppose prices tried to come to rest at $1.30. At this price sellers would be willing to sell more corn than buyers would purchase (Table 3: 1,940 compared to 1,750 million bushels). The desire of these extra sellers to sell at some price above $1.20 would result in price concessions to attract buyers. Any price lower than $1.20 would find additional buyers but fewer sellers. In this situation the desire of eager buyers to secure corn at what they considered advantageous prices would result in the bidding up of prices. At $1.20 both the buyers and sellers who are willing to enter the market at all would be satisfied, and 1,900 million bushels would change hands. This price would be an equilibrium price.

The equilibrium price is not a point readily found nor easily maintained. Rather, prices are always overshooting the mark in their search for the price which will clear the market. Changes may be small but they occur frequently as buyers and sellers search for the market-clearing price. It is more correct to say that the equilibrium price is that price toward which actual prices will *tend to move*.

## CHANGES IN DEMAND AND SUPPLY

We have carefully pointed out that demand and supply schedules and curves have meaning only for a given time and place. At a later time, for example, buyers and sellers may have an entirely new series of price-quantity relationships. The different supply-and-demand situations for ice cream in the summer and winter might be used as an illustration of this. Demand and supply have here changed with the season.

If *more* of a commodity is purchased at the same or higher price than previously, demand will increase. For example, referring to Table 1 again, if buyers now purchase 1,600 million bushels at $1.60, 1,670 million bushels at $1.50, and so forth, demand for corn will increase. If this new schedule were plotted on Figure 1, the new demand curve would be to the right of the original one. When *less* of a commodity is purchased at the same or lower prices than originally, demand will decrease. If we turn again to our corn illustration in Figure 1, a decreased demand curve would be shown to the left of the original curve.

A large number of factors can cause changes in demand. Generally such factors can be grouped as follows:

1. A change in population (providing the per capita purchasing power remains unchanged).
2. A change in the incomes or purchasing power of people.
3. A change in the tastes and preferences for particular products.

4. A change in the relative costs of products which are substitutable for each other.
5. A change in the expectations of buyers as to the future levels of prices.

The first two factors would generally either increase or decrease demands for all products. The next two factors would largely affect shifts in demand among individual commodities. The last factor could affect either the general or the specific demand situations. As we shall see later, the most important single factor influencing demand for agricultural products is a shift in the general income levels of the country.

Supply may also increase or decrease. If *more* of a product is offered for sale at the same or lower prices than before, supply will increase. Refer to our corn example in Table 2. If 2,200 million bushels are offered at $1.60, 2,100 at $1.50, and so forth, supply will increase. If this new schedule were plotted on Figure 2, the increased supply curve would fall to the right of the original. When *less* of a commodity is offered for sale at the same or higher prices than before, supply will decrease. The curve for this decreased supply would fall to the left of the original curve.

As is the case for demand, many factors can combine to increase or decrease supply. Generally, they may be classified as follows:

1. In the very short period, there may be a change in the various factors which would induce sellers to offer their available stock of goods at a different schedule of prices. These would include such factors as costs of storage, the sellers' need for cash, and the general expectations as to the future situation.
2. In the short run, there may be a change in the cost of production of the commodity itself based upon the availability of various resources for production as well as the degree of competitiveness of other firms.
3. In the long run, there may be changes in all of the factors mentioned in (1) and (2) plus changes in the availability of resources for altering productive facilities and the ease of making these changes.

Changes in demand and supply have their real importance in their effect on the equilibrium price. Figure 4 shows the effect on equilibrium price of four possible supply and demand shifts. The changed curve is always shown by the broken line and the new equilibrium price by p'. These examples can be expanded to show the results of all sorts of combinations of supply and demand changes. To be sure that these illustrations are understood, the student should list the factors which could have caused these shifts.

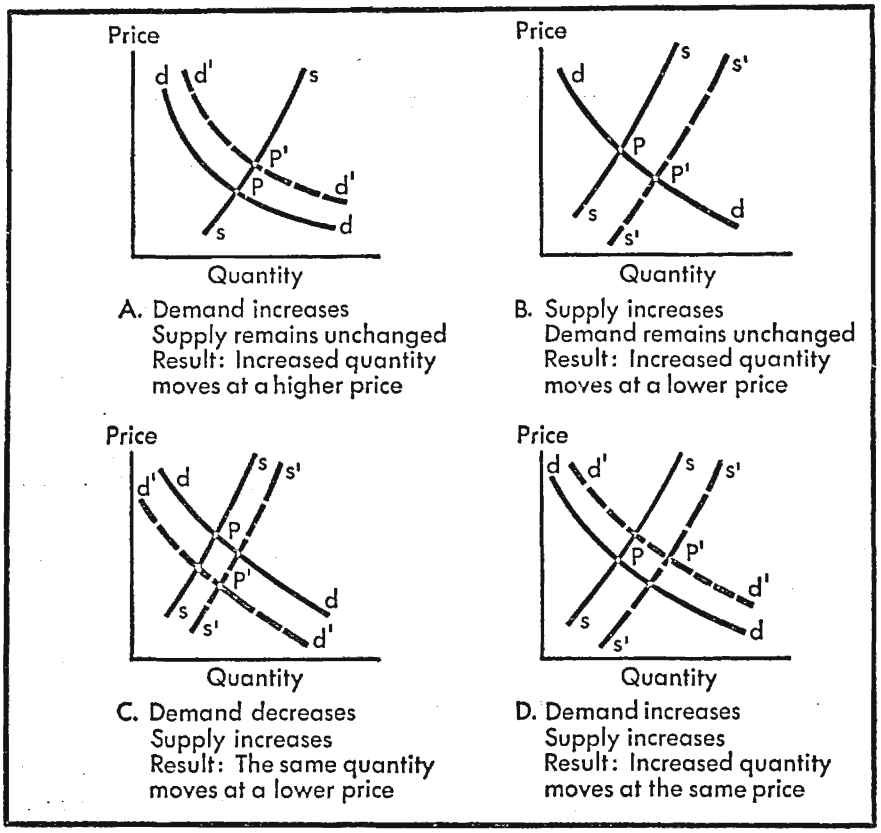


FIGURE 4. *Supply and demand situations illustrating some effects of changes in supply and demand.*

## ELASTICITY OF DEMAND AND SUPPLY

We have yet to discuss one additional and very important concept relative to demand-and-supply analysis. Both demand and supply are schedule relationships of prices and quantities. The law of demand states that as prices go down, the quantities purchased will increase. The law of supply states that as prices go down, the quantities offered for sale will decrease. But *how much* will the quantities respond to changes in price? The relationship of the changes in quantity to the changes in price is the concept of elasticity.

Generally, demand curves are usually classified according to their elasticities into two broad groups. These broad groups represent demand which is elastic and demand which is inelastic. The dividing point between these two classifications is unit elasticity. This latter we shall discuss first for the light it sheds on the meaning of our dual classification.

Demands with unit elasticity are those in which the changes in quantity taken are of the *same* magnitude as the changes in price. The elastic demands are those in which the changes in quantity taken are proportionately *greater* than the changes in price. The inelastic demands are those in which the changes in quantity taken are proportionately *less* than the changes in price. For example, let us assume price has decreased by 10 percent. The law of demand indicates that the quantity taken will increase. But how much will it increase? The changes in quantities taken for commodities with demand curves of different elasticities would be as follows:[3]

1. With unit elasticity, amount taken would increase exactly 10 percent.
2. With an elastic demand, amount taken would increase more than 10 percent—say 12 or 15 percent.
3. With an inelastic demand, amount taken would increase less than 10 percent—say 5 or 7 percent.

Commodities with inelastic demands are often those which fall into the classification of necessities and which have few substitutes. Consumers want them and are relatively insensitive to price changes. Commodities with elastic demands are often those whose use is not directed by necessity or habit and which have several close substitutes. Consumer response for such products is more sensitive to price changes.

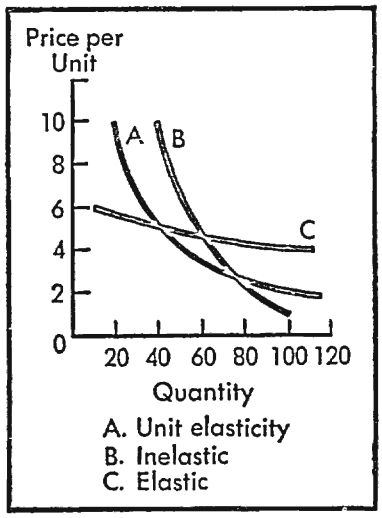


FIGURE 5. *Demand curves of different elasticities.*

[3] Elasticity can be mathematically calculated. When so presented, unit elasticity is −1; an elastic demand is something more than −1; and an inelastic demand is something less than −1. For a more complete discussion of elasticity analysis see W. C. Waite and H. C. Trelogan, *Agricultural Market Prices*, 2d ed. (New York, John Wiley, 1951), ch. 3.

On graphs of the same scale, the more inelastic the demand, the steeper is its plotted curve (Figure 5). The most important implication of demand elasticity is its effect on the total amount of money received from selling different quantities at varying prices. We can easily see this by studying the results of a 10 percent cut in prices on three hypothetical commodities of different elasticities. For a commodity with a demand of unit elasticity, the quantity taken would increase 10 percent and the total returns from sales under the new situation would be exactly the *same* as before the price cut. For a commodity with an elastic demand, the quantity taken would increase more than 10 percent and the new total returns from sales would be *greater* than before. However, for a commodity with an inelastic demand, something less than 10 percent more of the commodity would be taken and the total returns would be *less*. The total return curves which would be derived from demand curves of different elasticities are shown in Figure 6.

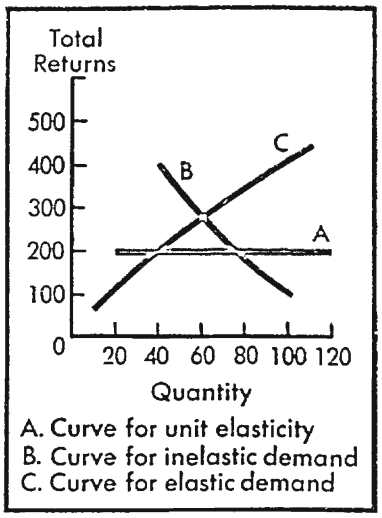


FIGURE 6. *Total return curves for the demand curves of different elasticities shown in Figure 5.*

Demand curves for the same product often are not of the same elasticity throughout the entire curve. For example, demand for an agricultural commodity may be inelastic when the price is very high, elastic when the price is in the middle ranges, and inelastic again when the price is extremely low. Such a situation would mean decreasing returns through part of the curve, increasing returns through the middle section, and decreasing returns again through the lower part of the curve as quantities and prices change. Elasticity may also change over a period of time. Thus, many things which were once luxuries with elastic demands may shift into the necessity category with inelastic demands.

Will a large crop return more money to growers than a small one even though prices are lower? What will be the effect of restricting output on the total returns from sales? Should a store seek to lower its prices to sell more goods? Knowledge of demand elasticity and its relationship to total returns is the key to the answers to such questions as these.

The same elasticity framework also can be applied to supply. Commodities which are very responsive to price changes have elastic supply curves. Those which respond relatively little to price changes have inelastic supplies. As for the different elasticities of demand, on graphs of the same scale the more inelastic the supply the steeper the plotted curve.

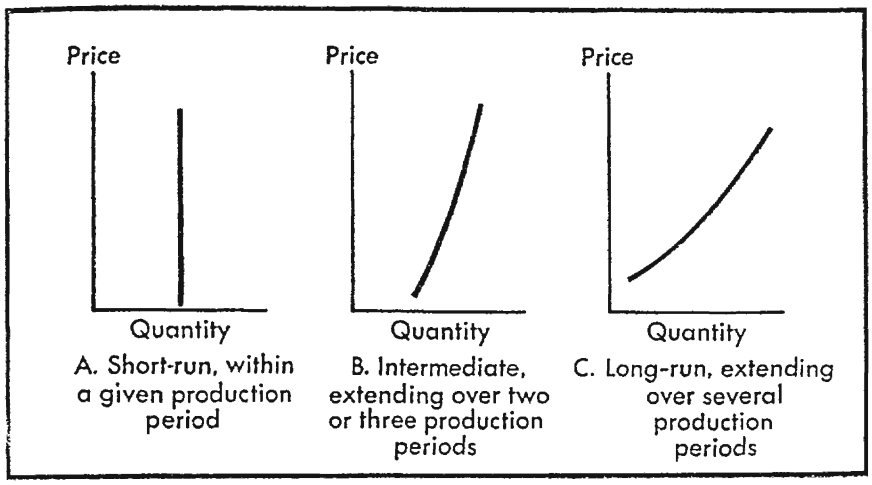


FIGURE 7. *Hypothetical supply curves illustrating the effect of time on elasticity.*

Time is a very important factor in supply elasticity analysis. Generally as the time period under consideration lengthens, the supply curve tends to be more elastic. For example, the supply curve for hogs for the period September through December is nearly perfectly inelastic. Regardless of price changes, little can be done to change the number of hogs available for slaughter. If an eighteen-month period is considered, farmers can change their breeding plans in response to price, and the curve will be somewhat more elastic. If a period of five or six years is considered, more hog houses can be built, more equipment can be obtained, and the supply curve will be more elastic. Such situations might be illustrated by the supply curves in Figure 7.

Within the very short period, the elasticity of the supply curve of sellers' offerings on the market will vary with the difference in storability

of a product. An owner of a perishable product has little choice except to move the product at almost any price. The supply curve in this instance would be almost perfectly inelastic (similar to situation [A] in Figure 7). If the product is storable, however, owners have more control over the time when they may sell it and can respond more readily to price changes. The supply curve in this instance would be more elastic than for the perishable product (similar to situation [B] in Figure 7).

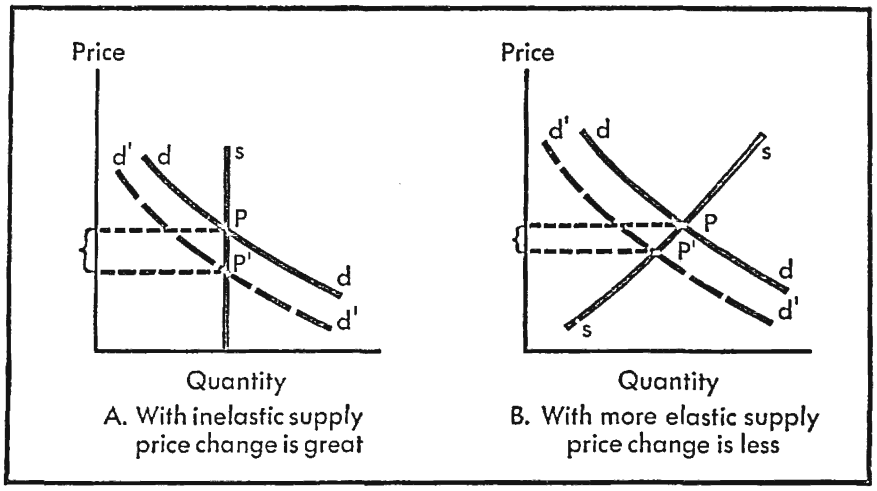


FIGURE 8. *Hypothetical supply-and-demand situations illustrating the effect of demand change in situations with different supply elasticities.*

The probability that there will be perfectly inelastic supplies for many agricultural products in the very short period has two major implications. First, it means that changes in demand are of tremendous importance in changing the equilibrium price. Secondly, it means that price fluctuations resulting from changes in demand are much more severe than when the supply curve is more elastic. Figure 8 illustrates the effect of an equal decrease in demand in two situations—one with a perfectly inelastic supply (A) and the other with a somewhat more elastic supply (B). Notice the difference in the degree of price change (p and p′) as the demand changes.

## SUMMARY

We may now briefly summarize the major points in the fundamentals of price determination under competition as follows:

1. The law of demand is a statement of consumers' tendencies to buy less as prices increase.

2. The law of supply is a statement of the producers' tendencies to sell more as prices increase.
3. The equilibrium price is the result of the interaction of supply and demand. It is that price at which buyers will take all that producers will offer.
4. Demand and supply may change independently. A change in demand or supply or both will result in a new equilibrium price.
5. Demand-and-supply curves have different elasticities. Elasticity differences will affect the total returns secured from selling different amounts at different prices. They also will influence the degree of change in equilibrium price as demand and supply shift.

## SELECTED REFERENCES

References for this Chapter and Chapters 7, 8, and 9 are listed at the end of Chapter 9.

CHAPTER SEVEN

# Competition in Food Marketing

The effective working of much which was discussed in the previous chapter assumes perfect competition. Under this assumption, prices will not only do the threefold job laid out for them, but they will also assure an efficiently functioning economic system. Businesses will operate at their optimum size, neither smaller nor larger. New technologies and other improvements will be snapped up and adopted immediately by all firms if they are to remain in business. The benefits from such improvements would also be quickly dispersed throughout society because of the pressure of the competitive pricing mechanism. We must assess how closely the existing marketing machinery approximates the ideal of perfect competition. The first part of this chapter will outline the assumptions and results of the competitive system. The second part will attempt to assess the extent and kind of competition operating in the actual marketing system.

## PERFECT COMPETITION

### *Assumptions of Perfect Competition*

The attainment of perfect competition rests on certain assumptions which may be broadly stated as follows:

1. There are a great number of both buyers and sellers no one of which is large enough to influence price through his action alone.
2. Both buyers and sellers have perfect and equal knowledge of all the factors which affect market conditions. Also, they will utilize this information in an economically rational manner so as to maximize their own individual gain.
3. There are no collusive or restrictive agreements among either buyers or sellers. In fact, there are so many buyers and sellers that coalition

by any relatively large group of them would be administratively infeasible.

4. There is no product differentiation. This does not mean there are no differences in quality. However, products of like quality will not be differentiated by brand name, advertising, extra services, and so on.
5. The factors of production are perfectly mobile and free to leave one industry to enter another in which they could secure greater returns. No barriers to the flow of capital, labor, and management exist.

*The Individual Firm*

Under perfect competition the individual business firm, whatever its nature, can sell all of its production at the market price. If its price is slightly above the market price it can sell nothing. If slightly below, it will be swamped with buyers. The individual business, since its output cannot affect price, can have no price and selling policy. The demand curve of the individual firm would be a horizontal straight line.

With the selling side of operations thus simplified, the firm would devote its time to adjusting its production. Since there is perfect knowledge and freedom of entry and exit from business, the firm will adjust its output to that point at which total profits are maximized. It would be forced to adopt improvements and pass on their benefits. In other words, under conditions of perfect competition, the place of the individual business is to accept the prevailing market conditions and adapt itself to them.

*The Market Area and the Law of One Price*

The term "market" is another of that large category of terms which has many meanings. It often is used in the sense of price, as in "the market was strong today." Or again it may be used as a designation of a selling point, such as "the Chicago hog market." In economic analysis, though, market area has a special meaning. It refers to that area in which buyers and sellers have the facilities to trade with each other. It is not a point or a city, but rather an area. The size of this area will be limited by the communication system and the transportability of the product.

Used in this sense, then, markets may be local, regional, national, or international in extent. Bulky hay has a small market area severely limited by high transportation costs. The perishability of fluid milk limits its market area. Livestock can be shipped widely, and its market is probably national in scope. When world trade was relatively free from restrictions, the wheat and cotton markets were international in scope. With our highly developed communication and transportation systems the tendency is for market areas to increase continually in size.

The prices of a particular commodity in a perfect market would be uniform throughout the area at any one time, after transportation costs to points of consumption are considered. At any one time, then, we should expect prices at all points within a market area to be the same if the appropriate transportation costs were added or subtracted. This latter idea is often called the "law of one price."

If the assumptions of competition are valid, the logical proof of this proposition is simple. If prices at one point in a market area were to become too high, additional sellers would be attracted to that point while prospective buyers at that point would transfer their orders elsewhere. This process would continue until prices were forced down and the point was again in line with other prices plus or minus the transportation costs in the market area. If the price at a point were too low, additional buyers would be attracted, but many sellers would reroute their offerings to another point. These actions would tend to raise the price back into line with others within the market area. Thus under conditions of perfect competition, it would make no real difference at what particular point within the market area that commodities were sold.

*Relationship of Prices to Costs*

The relationship of prices to costs under conditions of perfect competition is frequently misunderstood. Many assume that perfect competition assures a profitless and lossless situation. Such is far from the situation that is most likely to exist. In fact, the persistence of profits or of losses for a long time is more likely to exist, especially if we take into consideration the time necessary to move productive factors into and out of an enterprise. In fact, one of the necessary freedoms under competition is the freedom to leave an enterprise or to fail. Perfect competition would guarantee the right of any firm to enter into any field of endeavor, but it would not guarantee its monetary success.

In order to show the possibilities of long-time persistence of profits or losses, let us again refer to the three time periods mentioned in our supply analysis in the previous chapter. In the very short run period, goods have already been produced and are on hand. The level of demand may be such that sellers can dispose of their entire holdings at a profit. During this very short interval of time there can be no more goods produced and sold in order to capture part of the profits and as a consequence drive prices down. The supply is very inelastic, and for the individual sellers price may be very high. The same situation may exist in the opposite extreme. A low level of demand may mean that goods must sell at a loss. Therefore, in the very short run there is no necessary relationship between

costs and the prices received in the market. In agriculture, the perishable and seasonal nature of production makes these very short run profit and loss possibilities quite likely.

In the short run, it will be recalled, production can be altered within existing firms with existing technology. If demand is high, producers may expand production up to the point where rational conduct tells them to stop—that is, where the additional cost of another unit is equal to the price. At this output profits will be maximized. If the level of demand is so low that prices will not cover the direct costs of production such as seed and fertilizer, the producer may not produce at all. Or if the price will cover the direct proportion of his costs but not his fixed costs, he may produce up to a point where his losses are minimized. In either case under the assumptions of perfect competition, no one producer by his individual decision to produce or not to produce can influence price. Price is impersonal and competition is a ruthless distributor of rewards and penalties. No man can change the relationships between cost and price that result.

In the long run, however, new firms may enter an industry or old ones leave it. Existing firms can change their size and seek the most efficient technology. Under such a long-run consideration, if demand and prices are high and high profits are being enjoyed, production will be increased as more firms enter the industry and existing firms expand. Thus, prices will be under pressure from the increased production and eventually a profitless situation will result for all firms in a competitive industry. Similarly, if firms are operating at a loss, eventually enough firms will be forced out so that the remaining ones will share in the industry demand under conditions where there no longer are losses, but also no profits. Therefore in the long run, production will adjust so that average prices will tend to equal average costs.

The problems facing an apple orchard operator offer a good illustration of these different time period relationships. Once fruit is harvested the operator has the alternative of either selling at the market price or not selling at all. The demand situation may be such that he may enjoy large profits or suffer substantial losses, but he cannot alter his previously made decision to produce. And with so many other sellers, he cannot influence price by withholding part of his apples from the market.

In the short run as the harvest season approaches, the orchard operator can take certain actions if the price appears too low. He may cut out part of his spraying activities. He may decide to pick and pack only the better fruit—or in an extreme case, none at all. Or if the prices are high he may exert every effort to handle his crop so that he can harvest as many high quality apples as possible.

In the long run, if the prices have been persistently very low, he may abandon his orchard completely or reduce his tree replacement program. Or if the prices have been very high, new orchards may be started for production. As has been mentioned previously, the length of the long-run period varies depending upon the nature of the costs and equipment involved. In some cases it may be only a few years. Or as in the case of apple production it may be ten or more years.

## DEPARTURES FROM PERFECT COMPETITION

It doesn't take a particularly astute observer to recognize that the assumptions necessary for perfect competition are not fully attained in the real world of business activities. Furthermore, the natural tendency of men is to try to escape from the ruthlessness of the mechanism of perfect competition into some situation in which they have some control over their destinies as economic beings. In fact, it seems doubtful whether the perfectly competitive situation has ever existed except upon the pages of economic texts.

There are two major categories of departure from perfect competition. On the one hand is monopoly. In this situation, the control of production of an industry is by a single firm. Similar to monopoly in many of its effects is oligopoly. In an oligopolistic situation such a significant proportion of the production of an industry is controlled by a few firms that at least one of these dominant firms can influence price by changing its production. In the case of pure monopoly or simple oligopoly, no attempt is made by the firm to control demand. Demand is accepted and the firm determines the quantity which can be offered at prices which will maximize profits.

On the other hand is imperfect competition with product differentiation. In this situation a firm strives to make its product different in some respects from the products of other firms of the industry. In this way the firm attempts to achieve some influence over the demand for its own products regardless of what other firms in the industry do. Each firm attempts by differentiation to create a monopoly for its own product. But the demand for this product is very elastic since there are many close substitutes from the other firms in the industry.

### *Monopoly and Oligopoly*

A monopoly is not likely to exist for any length of time except where established or protected by the power of government. Monopolies could come into being if one firm controls the sole source of an important raw

material. Monopolies can also be created by the ownership of a patent for a very important technical process. If the technology of an industry is such that drastic economies of scale are possible, eventually one firm may control the output as it continually drives for larger volume and lower costs. Or the sheer financial power of one firm may drive all others out of the field. In the United States our basic beliefs have materialized into laws which make monopoly unwanted and illegal except in special cases (see Chapter 22). Public utilities, such as water companies, are monopolies which exist because of the sanction of the government.

Oligopolies are composed of firms which are conscious not only of their own individual influence on price but also of the influence the other rival firms might have. An oligopolist in any of his actions must always consider the potential retaliation of his rival firms. In a true ologopolistic situation, the real business challenge to the individual firm is how to live with its competitors and not to fight them. A fight among giants may end by crippling all concerned with no one benefiting. In effect, tacit collusion exists among the few large dominating firms that leads to a stability of price and production which may not represent profit maximizing for any one firm but rather a profit situation in which all can find tolerable existence. Such a situation forces oligopolists to turn to other forms of competition than price, such as product differentiation and service.

*Imperfect Competition and Product Differentiation*

Product differentiation may be defined as that condition under which a firm gets some particular recognition from consumers due to some special attribute that its product or service has which is not shared by the products of other firms. Factors which create differentiation may be classified as follows:

1. Genuine physical differences in products.
2. Assumed differences in products such as brand names, established reputations, good will, and so on.
3. Special services offered with products.
4. Habits or customary ways of doing things.
5. Locational advantages creating "local monopolies."

The individual firm with a differentiated product faces a demand curve for its output which is not the horizontal straight line of perfect competition but instead has some downward slope. However, the curve usually is highly elastic. A slight increase in price might result in such a decline in quantity sold that profits would disappear. A slight decrease in price might result in a tremendous expansion in sales if the firm were

prepared to increase its output and if its competitors did not retaliate. The firm is also usually forced into extensive expenditures to maintain the level of its demand. These expenditures may take the form of advertising, product improvement, offering of additional services, and so forth. These costs of maintaining its differentiated product exist regardless of changes in the level of raw material costs and tend to make cost and price structures somewhat inflexible.

Some successful firms may perpetually enjoy large profits. Other firms may not be so successful and barely hang on in the industry. Firm mortality rates may be high. However, firms in such circumstances are likely to be quite progressive in their search for and application of new techniques and improvements. The successful "differentiator" must continually keep persuading the consuming public that his product is better than ever before. The market acceptance of a differentiated product is likely to be quite dynamic, and for a firm to lag behind its competitors is to die.

## COMPETITIVE CONDITIONS IN AGRICULTURAL MARKETING

Agricultural producers have long been used as examples of firms operating nearest to the concept of perfect competition. They meet the requirements of numbers and undifferentiated products very well. Each farm firm can sell its output without influencing the price received for it. But many students of agricultural marketing and prices have carelessly generalized this situation to the whole food marketing structure. To assume near-perfect competition of the agencies and firms engaged in processing and selling agricultural products is to assume away many of the real problems of marketing.

A great many segments of the marketing machinery do not accept their prices as being "discovered" in the market place. Neither do they take market prices as something over which they have no control. Prices are man-made, not God-given. Prices are established by a firm, tested for correctness, and then accepted or revised.

Marketing firms do have a price policy and attempt to follow some market strategy. Many firms realize that the demand curve for their output is not a horizontal line, but rather has a downward slope. They cannot sell all they could produce at the same price, but rather must take a lower price for larger outputs. The questions of elasticity of their demand curve and what output will maximize profits become the important ones to be answered. They may be price leaders in their industry or follow the leadership of other firms. They may decide not to compete on the basis of price, but rather on non-price items such as delivery, advisory services for their

customers, and the like. Large advertising expenditures may be used to attract and influence customers. Through their trade organizations they may attempt to police and control the form that competition will take. One writer criticized those who concerned themselves with the mechanics for price discovery rather than with the price-making forces.[1] However, it may well be that many of the unsolved problems of marketing lie within this area of mechanics. The laws of supply and demand cannot be "repealed," but they can be distorted and circumvented for considerable periods of time.

One of the results of perfect competition is the impersonal relationship of the competitors. Marketing during the great majority of the time, however, is a very personal affair. Your competitor consists of people with whom you have business dealings, conversations, and other relationships. And as Stigler points out, economic relationships are never perfectly competitive if they involve any personal relationships between economic units.[2]

*Examples of Imperfection in Competition*

There is a strong temptation to emphasize those examples of the most drastic departures from competition. The concentration of economic power as measured by the proportion of the total business done by a few firms is widely cited as evidence of oligopolistic activity. And agricultural marketing does have examples of this kind of concentration. A reference to Table 4 in Chapter 23 will show that the top three companies control a high proportion of productive assets in important segments of the meat packing, baking, and dairy industries. Also, agricultural marketing and processing firms have not been immune from suspicion of illegal acts in restraint of trade. The antitrust dockets have had a liberal sprinkling of cases involving meat packers, millers, canners, bakers, milk distributors, and others. Some have resulted in convictions; some have not.

One does not have to go to the processing giants for evidence of trade restraining actions. Many of the regulatory laws affecting central markets, future trading, and so on, which will be discussed in Chapter 22, are the outgrowth of practices which were believed not to be conducive to vigorous competition. There is no real reason to believe that price fixing, market sharing, following the leader, economic coercion by some members of an industry of "undesirable elements," and other actions attributed to industry in general are not practiced at least to some degree by firms engaged in marketing agricultural products.

[1] F. L. Thomsen and R. J. Foote, *Agricultural Prices* (New York, McGraw-Hill, 1952), p. 119.

[2] G. L. Stigler, *The Theory of Price* (New York, Macmillan, 1947), p. 24.

Trade barriers have often laid the groundwork for competitive imperfection. Whether by intent or not, many regulatory actions by states or local units have the effective result of restricting freedom of entry and the free flow of goods. In this way some degree of monopoly power is obtained by the favored firms. City milk ordinances, state grading regulations, and truck size regulations which vary widely from state to state are merely examples of these artificial barriers.

However, probably the greatest amount of competitive imperfection stems from product differentiation either real or assumed, from various kinds of services offered with the product, from locational advantages, and from the power of habit and ignorance. These are neither illegal nor spectacular, and often are ignored.

Product differentiation in agricultural marketing has on occasion been de-emphasized because effective branding of farm products themselves is very difficult. However, we have seen that farm products are raw materials for the food marketing machinery. The great majority of our food by the time it reaches the consumer has been differentiated by brands and packaging. Even meat and fresh fruits and vegetables are not completely immune. Packers work hard on the public to build acceptance for their particular brands of ham and bacon. The label "Sunkist" is stamped on oranges. Canners attempt to make their various labels synonymous with different kinds of packs and qualities.

Effective differentiation is not limited to products alone. Marketing concerns make every attempt to separate their particular firms from others by offering special services, easier credit, and so on. This is done by retailers, wholesalers, and even commission men.

As we have indicated above, the end product of most differentiation is to remove the emphasis from price. The purpose of much advertising is to associate the name of a product or firm with the buying urge and reduce association with the price. We are urged to buy from a particular store because the clerks are friendly, because it is sparkling clean, or because it stays open after 6:00 P.M. We are told to buy bread "X" because it is made by a company which bakes only "quality goods." How do the prices in this particular store or of this particular bread compare with other stores or breads? What a question! We should trust the store and the baker always to treat us fairly!

Locational advantage furnishes the foundation for many departures from competition. Spatial monopoly need not be regional or nation-wide to be effective. Many country buyers of farm products can pay lower prices because of their location. Many retail outlets can charge higher prices because of their location. Some locational advantage arises because cus-

tomers are willing to pay extra for convenience. Other locational advantages arise because of the limited area over which products can be transported. But some of the competitive power of location arises because of the lack of nearby competitors. Such firms have limited monopoly power in exploiting their limited territory. A baker in a very small town or an isloated livestock buyer in the country may have more effective monopoly power than a huge baking concern or the agencies in a large central market. One should not make the mistake of associating power to exploit only with size.

Habit can lead to imperfection in competition. The power of habitual action can take many forms. For example, at one time the quality of cotton coming from southeastern Missouri was quite poor, and this therefore became a low price area. However, buyers continued to bid low in this area long after the quality problem had been corrected. Similarly, a section of Iowa historically was associated with low quality butter and low prices. After the quality differences disappeared, however, the price structure remained below that paid for similar quality in similar locations.

Habit can also be a factor in establishing the general pricing structure. The pricing of butter is an example. Originally a large amount of the nation's butter was marketed through the Chicago and New York exchanges. The quotations of these exchanges were widely accepted as correct indicators upon which to base butter prices throughout the country. With the passing of time, the marketing structure of butter has changed and now only a very small amount is sold through these exchanges. Trade pricing habits have not changed in step, however, and country buyers still rely heavily on the old quotation patterns.

Margins taken by various marketing agencies often become habitual. In time, a given margin receives trade acceptance as being "fair." The "fair" margin often tends to exist long after the marketing activities and structure which gave rise to it have changed. It was partly the resistance to changing margins in line with changed practices which led processors and retail chain organizations to by-pass the service wholesaler and set up their own wholesaling agencies (see Chapter 24).

Product differentiation, location, and habit can gain monopoly advantages largely because of the lack of knowledge on the part of buyers and sellers. With a lack of standardization and poor informational services, buyers and sellers cannot fully appraise alternative opportunities. It is often suggested that when alternative opportunities are available to the buyer or seller, competition must be effective. This need not be so. Numbers themselves do not fully prevent collusion or the tacit adoption of a live-and-let-live policy among rival firms. Neither do numbers assure that buyers and sellers will have the necessary facts to appraise alternatives adequately.

## USEFULNESS OF THE COMPETITIVE MODEL

As one becomes more familiar with the agricultural marketing machinery, it is evident that departures from the model of perfect competition are the rule rather than the exception. Diagrammatically, the marketing structure can be represented as in Figure 1. At one extreme is perfect competition and at the other is perfect monopoly. With the possible

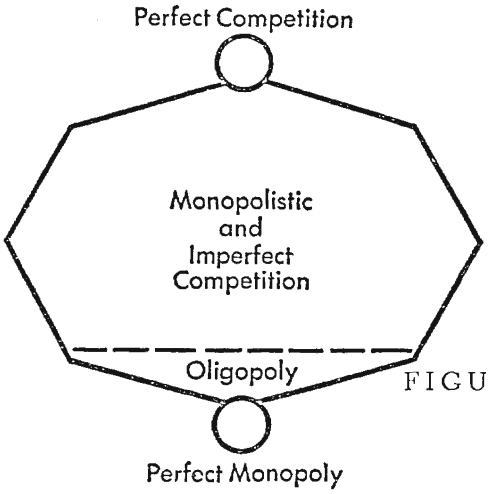


FIGURE 1. *Diagrammatic distribution of conditions under which agricultural marketing occurs.*

exception of government monopolies, extremely little if any business is transacted under either of these extreme conditions. The individual farm firm probably lies as close to the perfect competition pole as any. The great bulk of business activity is carried on between these extremes under varying degrees of concentration of business with product differentiation of some type.

How useful, then, are the ideas of how prices are formed and business operates under perfect competition? Its principal use is as a model or measuring stick against which to compare the actual situations. The analysis of equilibrium prices, the one-price nature of a market area, and the nature of the relationships between cost and prices are all useful tools in studying price behavior. By isolating the nature of the departure from the model, we may be better able to see the cause and to prescribe a correction if one is really desired.

There is real usefulness, too, in the knowledge that the agricultural marketing machinery does not operate perfectly. Why are new techniques not accepted eagerly by marketing firms? Why do consumers not share

rapidly in improvements? Why do tremendous inequalities exist year after year? Questions such as these find many of their answers in the imperfect competition which exists. Such knowledge also prevents us from thinking of the marketing machine as an impersonal affair which will react in a precisely predictable fashion to given economic forces. It also should prevent us from believing blindly that a "hands-off" policy is always best. Marketing is carried out by individuals who take economic forces as something to struggle with and to mold to their advantage and not as something to obey without question. After all, Adam Smith, one of the fathers of modern economics, in explaining how each individual struggling to benefit himself would benefit all of society, had to fall back on his celebrated reference to the "guidance of the invisible hand."

It is this imperfectly competitive machinery which is the basic model of business activity in the United States. It is this machinery which has been, in the aggregate, so successful in creating the rapid advancements and high standards of living which we enjoy. Competition exists and is a force even though it is not perfect. The perfect competition of the textbook is not a realistic goal for a modern society. However, we must have some criteria for judging when competition is effective and when situations have developed which are not desirable. How can we decide when competition is "adequate" or "effective"? Edwards [3] has evolved the following as guideposts for judging an effectively competitive system:

1. There must be an appreciable number of buyers and sellers. They do not need to be so numerous as to have no individual market influence, but the number must be great enough to provide alternative possibilities.
2. No trader must be so powerful as to be able to coerce effectively his rivals.
3. Traders must be responsive to incentives of profits and loss—they must not be so huge that they can ignore commercial incentives over long periods of time.
4. There must be no agreements on commercial policy among rivals.
5. Entry must be free from handicap except that which is automatically created by the existence of already established firms.
6. There must be free access of buyers with sellers. There must be no substantial preferential treatment of any particular trader or group.

The idea of competition represented by the above criteria accepts the real life propositions that wide differentiation in products does exist, that

[3] C. D. Edwards, *Maintaining Competition* (New York, McGraw-Hill, 1949), pp. 9–10.

both price and non-price competition is used, and that large firms will develop as they exploit the economies of scale which are the result of modern technology.

There will be the continuous problem of evolving and maintaining an effective competitive situation. The conditions which may result in effective competition for one industry may not give the desired results in another. How many buyers and sellers are required for an "appreciable number"? How powerful must the trader be to be able to "coerce effectively" his rivals? What handicaps are "automatically created" by established firms and what are not? What is "substantial" preferential treatment? These are difficult questions—many would say questions which are impossible to answer. But such an ostrich, head-in-the-sand attitude will only ignore some of the most difficult marketing problems.

CHAPTER EIGHT

# *Agricultural Prices*

The preceding two chapters have set forth some of the rudiments of the price making forces and a general appraisal of the competitive structure of the marketing machinery. This chapter will briefly outline some of the characteristics of agricultural prices. This is not a text of agricultural prices, and the student who wishes to study that field in detail will find several books completely devoted to the subject. However, some understanding of the nature of farm product prices is necessary background to the following chapter on government farm price and marketing policies and programs. Many of the attitudes of agricultural people toward the rest of the economy find their origins in the relationship of agricultural prices to nonagricultural prices. Many of our more serious marketing problems are those which stem from the price aspects.

## AGRICULTURAL AND NONAGRICULTURAL PRICES

One of the outstanding characteristics of the American economy has been the wide fluctuations in its business health. Periods of depression, recovery, boom, and recessions in prices and business activity have been the historic norm. Long periods of stability in prices and business activity have been rather unusual. As the general price level of the country has moved up and down, so have agricultural prices.

A study of Figure 1 will show that with each major war the level of prices has tended to almost double. This sharp increase has been followed by sharply falling prices. Agricultural prices, too, have been pulled up and down in this general sweep.

Such sweeps in prices would not necessarily adversely affect the prosperity of farmers or any other group if all elements of the costs and returns of different industries adjusted themselves quickly to the changing level.

Five-dollar hogs would not be disastrous if taxes and prices of fertilizers, machinery, and the like also were reduced by comparable amounts. Such adjustment, however, does not easily or quickly occur. The returns to some groups of our citizens are more sensitive to the economic ups and downs than are others.

Since 1915, there have been two periods of sharply rising prices which were associated with the two world wars. There have been two periods of sharp price declines. One followed World War I and the other was during

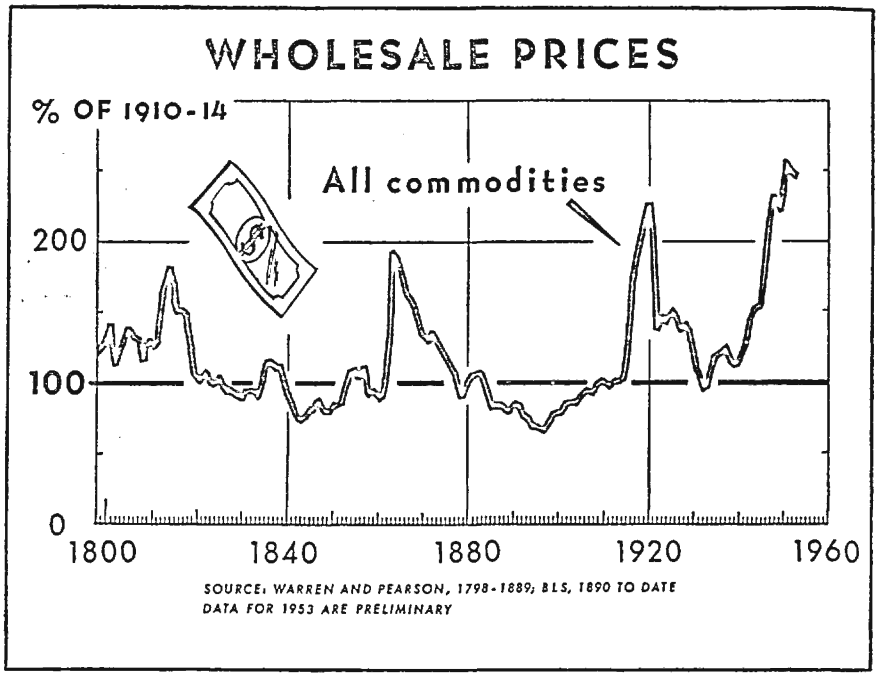


FIGURE 1. *Wholesale prices in the United States, 1780 to 1953, showing the wide fluctuations which have occurred in the wholesale price level.* (*Courtesy USDA.*)

the 1930's. Figure 2 shows how agriculture and industry reacted to these changes. When these two industries are compared, a major difference becomes evident. Agricultural production rose gradually throughout the period with only very minor short-run changes. Agricultural prices fluctuated violently. Industrial production, too, has tended upward throughout the period. But it was reduced substantially during the early thirties and rose sharply during World War II. When industrial prices are compared to agricultural prices, we see that they did not fluctuate as violently. The difference, then, can be summed up quite briefly. Agriculture reacts by tak-

ing nearly all of the impact in the prices for its product while maintaining production without much change. Industry attempts to lessen its price fluctuation by adjusting production.

This difference does not mean that the industrial segment profits from depressed conditions. Incomes in both agriculture and industry are a result of both prices and the volume of goods sold at those prices. Sustained output with very low prices in agriculture and reduced output at sustained prices in industry both result in low incomes and profits. Part

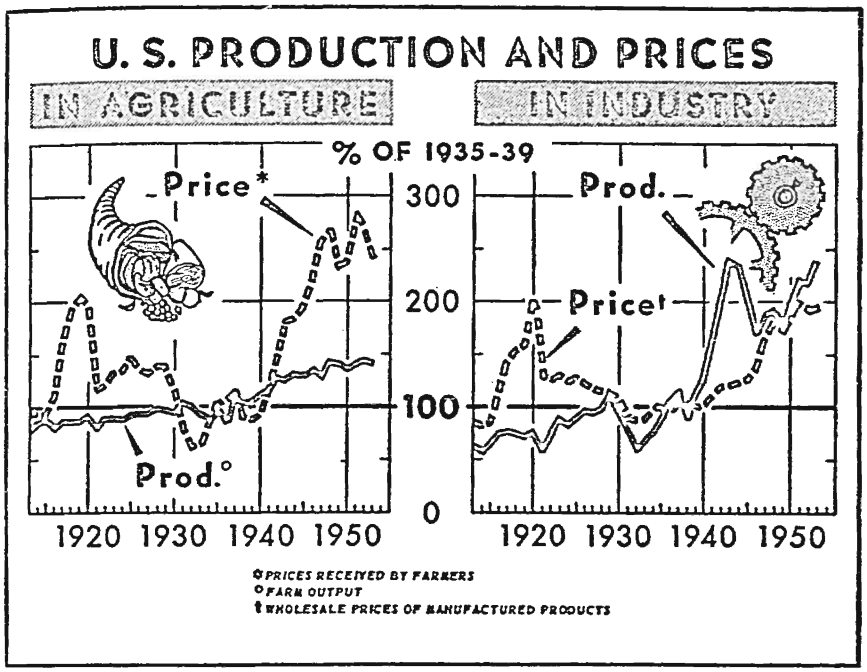


FIGURE 2. *A comparison of agricultural prices and production with industrial prices and production showing the relative stability of agricultural production and the relative instability of agricultural prices.* (*Courtesy* USDA.)

of the reason for the difference in taking adjustments becomes evident when we consider the differences in the competitive and cost structures of these two sectors of our economy. In manufacturing there are few enough firms in each industry so that a considerable oligopoly element exists. Each firm, conscious of the effect of its own production on price, reduces production as demand declines. Or a producer of a differentiated product with just a "little monopoly" cannot sell as much of its special product as before and yet hesitates to reduce price for fear either of re-

taliation from other firms or of spoiling the customary relationships of the market. In agriculture the many producing firms have no power over price. The farm firm also has a large portion of its costs fixed and a smaller portion which are variable. Under these circumstances, it continues to produce in order to recover as much of its costs as possible and will not withdraw from production until after a very long-run period of losses.

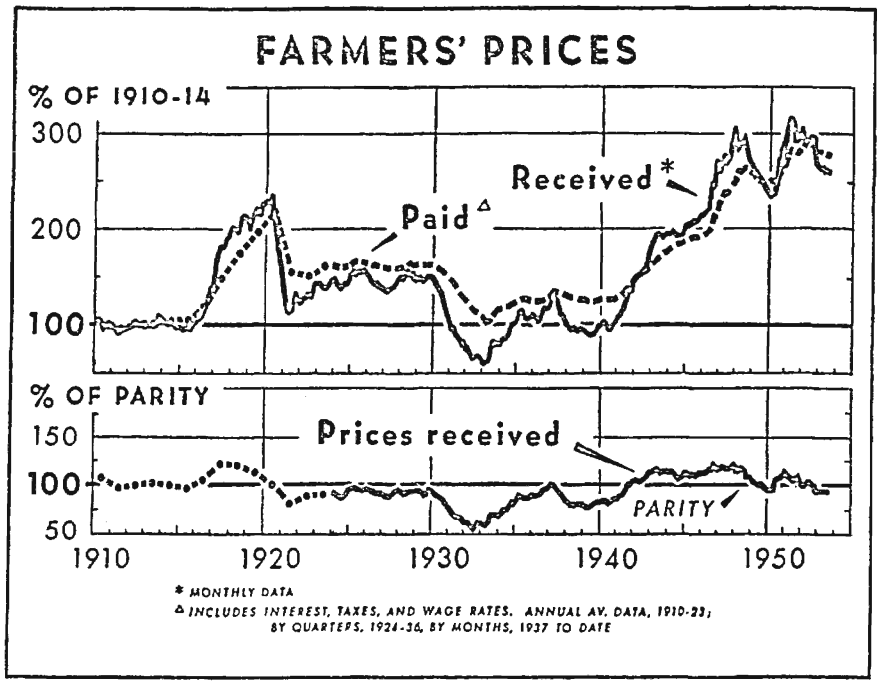


FIGURE 3. *Prices received by farmers and prices paid by farmers showing how prices received fluctuate through wider limits than do prices paid.* (*Courtesy USDA.*)

But the agricultural industry is not an isolated group. It sells its products to nonagricultural groups and it must buy the things it needs from these groups. With agricultural output relatively stable, variations in the gross income to farmers will come largely from changes in the prices they receive for products. With agricultural production relatively stable, the volume of things which farmers need to buy for production purposes also will not fluctuate drastically. Farm production expenses, then, will be closely related to the prices of things farmers have to buy.

Under these circumstances, the relationship which exists between prices farmers pay and those they receive is a major factor in determining their net income. Figure 3 shows the relationship between prices farmers

paid and prices they received. When the level of business activity rises, the prices farmers receive for their products rise faster than those they pay. Gross farm income rises more than production expenses and so net income to farmers also rises. When business activity falls, the prices farmers receive decline more than the prices they pay. Gross farm income falls more than production expenses, and net income therefore declines even more sharply.

## INDIVIDUAL COMMODITY PRICES

As we have discussed above, the average level of all farm prices is primarily determined by the conditions of the total economy. Total agricultural production does not vary much from year to year. Production of individual commodities varies considerably more from year to year. But even for individual crops, the activity level of the whole economy, as measured by the general price level alone, will explain a large share of their price fluctuation. Fundamentally, then, prices of each individual commodity tend to move up and down together with the price level.

TABLE 1. *Pattern of Annual Price Variability of Selected Products, United States, 1910–46* *

| CHANGE IN PRICE FROM PRECEDING YEAR | DAIRY PRODUCTS | POULTRY AND EGGS | MEAT ANIMALS | WHEAT | CORN | FRUIT AND TREE NUTS | TOBACCO | COTTON | POTATOES |
|---|---|---|---|---|---|---|---|---|---|
| PERCENT | NUMBER OF YEARS | | | | | | | | |
| +31 and more | 1 | 1 | 3 | 4 | 3 | 3 | 5 | 10 | 11 |
| +21 to +30 | 2 | 4 | 3 | 3 | 6 | 2 | 5 | – | 2 |
| +16 to +20 | 4 | 2 | 1 | 1 | 1 | 5 | 2 | 1 | – |
| +11 to +15 | 3 | 4 | 6 | 5 | 4 | 3 | 1 | 1 | 3 |
| + 6 to +10 | 4 | 4 | 2 | 4 | 5 | 3 | 2 | 3 | 1 |
| From 0 to ±5 | 15 | 11 | 12 | 6 | 7 | 10 | 10 | 10 | 3 |
| − 6 to −10 | 2 | 3 | 2 | 2 | 3 | 2 | 1 | – | 3 |
| −11 to −15 | 2 | 3 | 1 | 5 | 1 | 2 | 5 | 4 | 1 |
| −16 to −20 | – | 2 | 3 | 1 | – | 4 | 1 | 1 | – |
| −21 to −30 | 3 | 2 | 1 | 1 | 1 | – | 4 | 2 | 4 |
| −31 and less | – | – | 2 | 3 | 4 | 2 | – | 4 | 7 |
| Average change in percent | 10.2 | 12.2 | 15.1 | 18.0 | 21.0 | 15.6 | 18.2 | 22.1 | 35.2 |

* With exception of wheat, corn and, potatoes, which are for 1910–45.

SOURCE: T. W. Schultz, *Production and Welfare of Agriculture* (New York, Macmillan, 1950), p. 78.

Wide fluctuations in farm commodity prices is the rule, not the exception. Table 1 shows the extent of year-to-year price fluctuations which have occurred over a long period of time. These data are considerably different from the data showing the pattern of production which we have studied previously. The wide fluctuation in prices shown here again demonstrates why agriculture is so price-conscious.

*Nature of Supply and Demand*

For an explanation of much of this wide price fluctuation, we may turn to the characteristics of the supply-and-demand curves for different commodities in addition to the character of competition in agriculture to which we have already referred. We have noted that because of the nature of agricultural production, the supply curve within any given production period is, for all practical purposes, perfectly inelastic. Even for longer periods, the supply curve tends to be on the inelastic side.

For crops, the response of production to prices is a very tenuous one. After all, to a large extent the factors such as weather, disease, and so on, which affect yields are largely beyond the control of the farmer. A farmer may respond to price by changing his acreage, but acreage often is only a small factor in determining total production changes. The data in Table 2 indicate the complicated way in which the acreage of some crops may respond and also the limited degree to which acreage is associated with production. For example, the value (price received per bushel times the yield) per acre of wheat last year and this year will together explain 29 percent of the change in fall wheat acreage planted this fall. Farmers do attempt to respond somewhat to recent price experience. However, because of weather and other factors, the production realized next year is not related to this acreage. Farmers may plant less acres, but because of a good year end up with more wheat!

To this we must add the fact that the amount of feed production is a major factor in determining the level of livestock production. High level livestock production can come only from high level feed production. Prices alone do not fatten livestock or produce milk and eggs. A large corn crop will set off a chain of reactions which, either directly or through the ratio of corn prices to livestock prices, will increase the number of cattle on feed, the number of sows to be farrowed, and the size of the poultry laying flock.[1]

On the other side of the picture, agriculture is faced with demands for its products which are highly inelastic at the farm level. There is con-

[1] See Kohls and Paarlberg, *Short-time Response of Agricultural Production to Price and Other Factors.* Indiana Bulletin 555, 1950, for detailed livestock response relationships.

TABLE 2. *Response of Acreage of Selected Crops to Various Price Factors* *

| CROP | MOST IMPORTANT FACTORS RELATED TO ACREAGE CHANGE | PERCENT OF ACREAGE VARIATION EXPLAINED BY FACTORS | PERCENT OF PRODUCTION VARIATION EXPLAINED BY ACREAGE |
|---|---|---|---|
| Spring wheat | March price in planting year | 23 | 13 † |
| Fall wheat | Value per acre same and preceding year | 29 | 4 † |
| Corn | November-January prices for 1 and 2 preceding years | 8 † | 37 |
| Oats | July-September prices for 1 and 2 preceding years | 24 † | 74 |
| Potatoes | December price 2 preceding years; August price preceding year | 57 | 78 |
| Cabbage | Price preceding year | 54 | 72 |

* All prices are corrected for the price level.

† These relationships are not statistically significant.

SOURCE: R. L. Kohls and Don Paarlberg, *Short-time Response of Agricultural Production to Price and Other Factors*, Indiana Bulletin 555, 1950.

siderable evidence that the consumer demand for food and services at retail levels may approach unity. (Recall that consumers spend a percentage of their income for food which is remarkably stable from year to year—Chapter 3, Figure 1.) The value of the raw commodity at the farm level is derived from the value of that commodity at the consumer level. Farm value is substantially consumer value minus the marketing charges. These marketing charges, it will be recalled, tend to be on a fixed dollar amount rather than on a percentage basis. Such a situation would result in demands which are more inelastic as one moves from the retail level back through the marketing channel to the farm level.[2]

Even though there is considerable disagreement among researchers as to the exactly correct figures, there is wide agreement that the demand curves for a great many farm products tend to be inelastic—some of them highly so. Only a relatively few products have been found to have elastic

[2] For a more complete discussion of derived demands and elasticities see F. L. Thomsen and R. J. Foote, *Agricultural Prices*, 2d ed. (New York, McGraw-Hill, 1952), ch. 3.

demands at the farm level. This means that a 10 percent change in farm prices will result in substantially less than a 10 percent change in amount taken. And more importantly it means that a small crop or reduced production will bring higher total returns than a large crop or high production. (See Chapter 6, Figure 6.)

With wide variations in incomes and purchasing power as the economy moves through its wide swings, the demand curve for agricultural products shifts sharply. With production dependent on factors beyond man's control, supply of individual commodities also will shift from year to year. With the inelastic nature of the two curves, such shifts will give wide variations in farm prices. (See Chapter 6, Figure 8.)

*Cyclical Price Fluctuations*

Certain farm prices fluctuate in rather regular patterns through a period of time in addition to fluctuating erratically from year to year. Livestock production and prices, especially, have more or less regular cycles in production and prices. That is, they tend to move up and down over a period of years regardless of outside factors. The price cycle runs opposite to the production cycle—when production is increasing, prices are decreasing. After a time these movements will reverse themselves and production will decline as prices rise. Figure 4 illustrates these cyclic movements in cattle and hogs over the past several years.

In general, these cycles can be explained by the tendency of producers to base tomorrow's production plans on the profits of current or recently past operations. The length of the cycle is dictated, however, largely by the biological nature of the commodity.

For example, let us suppose that hog production is relatively low and hog prices high. People in the hog business look at their favorable earnings of the past year and decide to expand their hog enterprise. Others who previously had left the business decide to re-enter. But to expand hog production means that more gilts must be withheld from market and bred. Time must elapse before pigs can be born, fattened, and sent to the market. All in all, some two to three years will elapse before the full, intended expansion may result in additional hog supplies on the market. By that time increasing supplies will be driving prices down. Producers will be appraising the situation as unprofitable and decide to raise fewer hogs. The faint of heart may liquidate their hog enterprises altogether. The cycle will then reverse itself; production will decline and prices will increase.

Such cycles are possible only in those commodities in which producers have considerable control over production. There are no well-defined price production cycles in most crops. The wheat grower referred

to earlier has only partial control over his wheat crop, and therefore cannot respond with regularity to price encouragement. The cattle cycle has averaged about fifteen years in length (from peak to peak or from trough to trough), with individual cycles varying from twelve to twenty years. Since the middle twenties there appears also to be a cycle in dairy cow

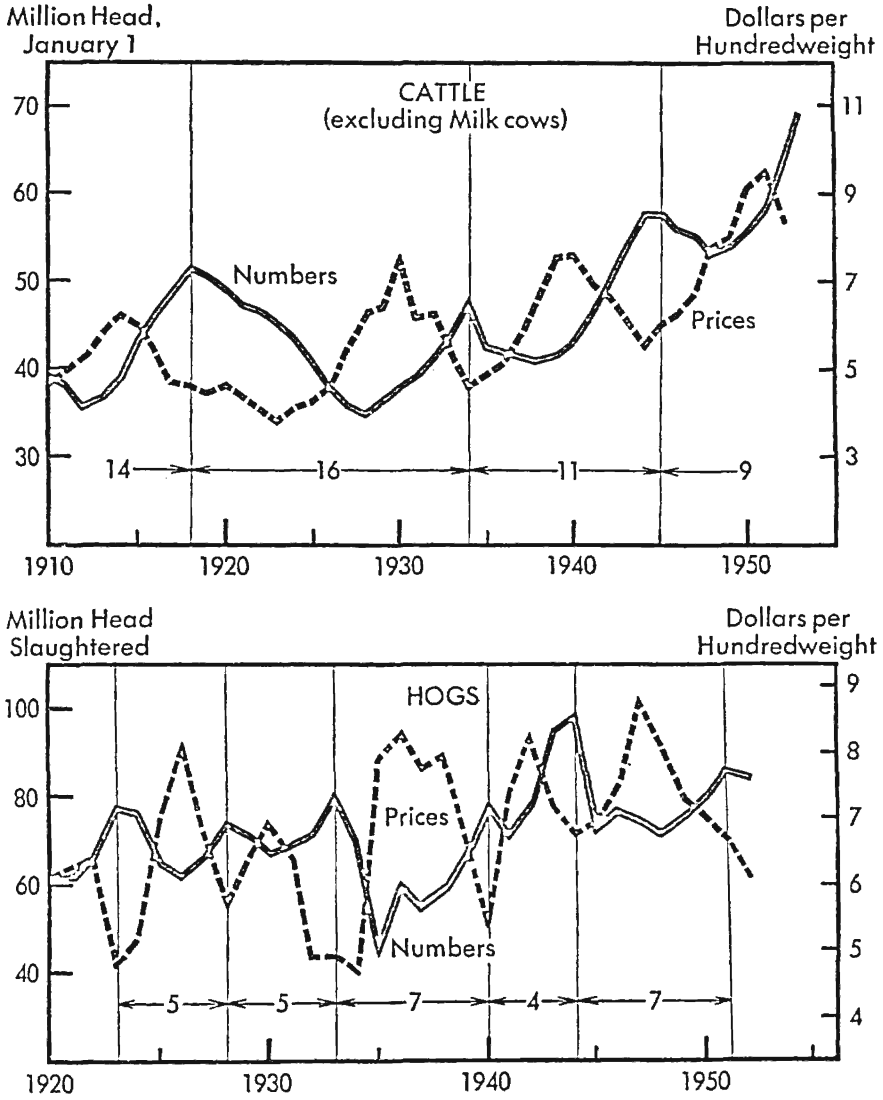


FIGURE 4. *Cyclic movements in cattle and hog numbers and prices showing the length of the number cycles. (Prices have been corrected by the index of prices received by farmers.)*

numbers and prices which move with the total cattle cycle. The hog cycle has averaged about five to seven years in length. Some writers also list a poultry cycle of two to three years.

A study of Figure 4 and Table 3 will show that cycles are not highly regular either in amount or length of their fluctuations. Extraordinary conditions such as a sharp reduction in feed supplies because of droughts may extend a contraction or stifle an expansion in numbers which may have been underway. Sharply expanding demand during wars may prolong an expansion or cut short a contraction phase of a cycle which is underway. At best, cycles are important "tendencies." Turning points are evident in many cases only after they have been reached and passed. Such limitations, however, do not prevent them from being useful tools for the market analyst.

TABLE 3. *Regularity of Cyclic Movements in Cattle and Hog Numbers, United States*

| CATTLE | | | | HOGS | | | |
|---|---|---|---|---|---|---|---|
| YEAR OF PEAK | YEAR OF LOW | YEARS IN DOWN MOVEMENT | YEARS IN PREVIOUS UP MOVEMENT | YEAR OF PEAK | YEAR OF LOW | YEARS IN DOWN MOVEMENT | YEARS IN PREVIOUS UP MOVEMENT |
| 1890 | 1896 | 6 | – | 1900 | 1902 | 2 | – |
| 1904 | 1912 | 8 | 8 | 1908 | 1910 | 2 | 6 |
| 1918 | 1928 | 10 | 6 | 1912 | 1914 | 2 | 2 |
| 1934 | 1938 | 4 | 6 | 1916 | 1917 | 1 | 2 |
| 1945 | 1948 | 4 | 7 | 1919 | 1921 | 2 | 2 |
| | | | | 1923 | 1926 | 3 | 2 |
| | | | | 1928 | 1931 | 3 | 2 |
| | | | | 1933 | 1935 | 2 | 2 |
| | | | | 1940 | 1941 | 1 | 5 |
| | | | | 1944 | 1945 | 1 | 3 |
| | | | | 1946 | 1948 | 2 | 1 |

*Seasonal Price Fluctuations*

Seasonal fluctuations are more or less regular patterns of price fluctuations which occur within a year. Because of the dependence of agricultural production upon climate, there are definite periods of high and low production for different commodities. Corn must be planted in the spring and is ready for harvest in October and November. Chicks purchased in the spring will start laying late in the year and reach their peak production the following spring. Pigs are farrowed in the spring and fall and are ready for slaughter about six months later. As we would expect, the counterpart of these shifts in supply is an opposite pattern of prices, as demand for

TABLE 4. *Indexes of Seasonal Variation of Prices Received by Farmers for Selected Products, United States (Monthly Average for 1922–41 = 100)*

| COMMODITY | JAN. | FEB. | MAR. | APRIL | MAY | JUNE | JULY | AUG. | SEPT. | OCT. | NOV. | DEC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grains: | | | | | | | | | | | | |
| Wheat | 102 | 102 | 103 | 103 | 100 | 97 | 96 | 97 | 97 | 97 | 99 | 101 |
| Rye | 103 | 103 | 103 | 102 | 102 | 98 | 97 | 96 | 98 | 98 | 99 | 102 |
| Corn | 92 | 94 | 95 | 98 | 103 | 106 | 110 | 112 | 111 | 98 | 91 | 91 |
| Oats | 103 | 104 | 104 | 105 | 105 | 103 | 100 | 92 | 94 | 94 | 96 | 100 |
| Cotton | 98 | 99 | 100 | 100 | 102 | 102 | 105 | 102 | 102 | 98 | 97 | 96 |
| Soybeans | 103 | 103 | 105 | 110 | 115 | 106 | 100 | 90 | 90 | 87 | 93 | 98 |
| Peanuts | 95 | 98 | 102 | 103 | 105 | 105 | 104 | 104 | 102 | 95 | 95 | 92 |
| Fruits, vegetables: | | | | | | | | | | | | |
| Apples | 99 | 103 | 106 | 110 | 119 | 126 | 110 | 88 | 82 | 81 | 85 | 92 |
| Oranges | 67 | 76 | 85 | 97 | 105 | 113 | 120 | 126 | 137 | 121 | 85 | 92 |
| Potatoes | 97 | 98 | 100 | 103 | 103 | 103 | 114 | 114 | 97 | 88 | 91 | 92 |
| Snap beans | 155 | 159 | 155 | 115 | 79 | 71 | 56 | 65 | 66 | 78 | 92 | 110 |
| Tomatoes | 137 | 150 | 149 | 144 | 112 | 68 | 59 | 42 | 41 | 68 | 96 | 135 |
| Livestock and products: | | | | | | | | | | | | |
| Milk, wholesale | 106 | 103 | 98 | 94 | 90 | 89 | 93 | 98 | 103 | 107 | 110 | 109 |
| Butterfat | 104 | 102 | 102 | 99 | 95 | 92 | 93 | 95 | 99 | 103 | 106 | 110 |
| Beef cattle | 98 | 98 | 102 | 104 | 104 | 103 | 102 | 101 | 100 | 98 | 96 | 95 |
| Lambs | 99 | 102 | 106 | 106 | 107 | 105 | 100 | 96 | 96 | 95 | 95 | 95 |
| Hogs | 94 | 98 | 102 | 100 | 98 | 98 | 105 | 107 | 110 | 103 | 95 | 89 |
| Chickens | 96 | 98 | 100 | 104 | 105 | 104 | 103 | 101 | 101 | 99 | 95 | 92 |
| Eggs | 95 | 88 | 82 | 82 | 82 | 82 | 91 | 98 | 114 | 126 | 138 | 122 |

SOURCE: USDA, Bureau of Agricultural Economics.

most food is relatively constant year around. Table 4 gives the long-time average seasonal pattern of prices for selected commodities. Most students will want to substitute the seasonal patterns for the commodities in which they are particularly interested and which apply to their particular area. However, patterns for different areas will usually differ only in degree.

Seasonal prices reach their low points during harvest or peak production periods. Then they will begin a slow rise until just before the next peak production period. For example, the low period for wheat is in July, for corn in November, and for cotton in October. The peak period for wheat prices is reached during March and April, for corn during August, and for cotton during July. Hog prices have two periods of high and low prices during the year corresponding to the two-litter farrowing system.

The amount of seasonal price fluctuation is the combined result of the violence of the seasonal production plus the storability of the commodity. Reference again to Table 4 will help illustrate this. Certainly the production pattern of grains is a violent one. All the wheat is harvested within a period of a few summer months. The peak harvest time of snap beans and tomatoes also occurs during a brief period of late summer. However, wheat prices fluctuate only about 10 percent from low to high while snap bean prices are three times as high during the peak price period as in the low period. The principal reason for this difference is that wheat is storable while snap beans are not. Theoretically, the perfect seasonal variation will just cover the cost of storage if the product is storable.

Like cyclic patterns, seasonal patterns are not 100 percent accurate. The average pattern is just an average of many observations. The average represents the pattern most likely to occur if history repeats itself. Too, all seasonals are not of equal reliability. Neither are all months of the seasonal price pattern of equal reliability. Generally, the average can be relied upon to point up correctly the direction of price movement but not the amount. Seasonal patterns may also change over the years. New production patterns or improved storage techniques would affect changes. For example, as better pork production methods have shortened the time necessary to produce a market hog, the peak in the seasonal price pattern has changed. It once was in October and now in many states it occurs in August. Knowledge of these patterns, even with their limitations, is among the most useful of marketing facts available to farmers. Every worker in agricultural marketing should be thoroughly familiar with them. However, he should also use them in relation with other pertinent facts which may be known about the current supply-and-demand picture.

CHAPTER NINE

# *Governmental Price and Marketing Programs*

In this chapter we want to discuss briefly the highlights of the various governmental programs which have been proposed or adopted to affect directly the price and marketing structure for farm products. Government also affects marketing through many other regulatory laws and programs, but we shall discuss those in a later chapter. Here we will limit our discussion to those developments since World War I which have aimed directly at protecting the price position of agriculture. In limiting our attention to this comparatively recent period, however, we must realize that agitation to aid agriculture is as old as the industry itself. Many of the devices considered as new developments have been tried in various forms throughout history.

## BACKGROUND FOR AID

Throughout the last several chapters several points have been developed which seemed to farmers, at least, to be pertinent to their situation. We are now in a position to summarize some of these background factors which are so important in explaining attitudes and which ultimately determine legislative policy.

1. Farmers are very price-conscious. With relative stability in production and the relative lack of control over it, both gross and net incomes have been associated with the level of prices. High and rising prices mean farm prosperity. Low and falling prices mean farm depression. To a large segment of agriculture it is as simple as that.
2. Farmers increasingly believe they are the tail of the economic dog. They cannot divorce themselves from the rest of the economy, and

they receive the most severe jolts as the price and business levels zoom up and down over the years. Prices they receive are much more sensitive than those they pay. Depressions of the whole economy appear to have accounted for a much greater amount of agricultural failure than either poor husbandry or management. With increasing industrialization and urbanization, agriculture finds itself less and less self-sufficient and more and more closely tied to the general economy.

3. Prices of individual commodities are extremely unstable. Wide fluctuations both within the year and from year to year are the normal pattern. And since many farmers produce only one major product, such as wheat, cotton, tobacco, cattle, and so on, what these individual prices do is a matter of great concern. With the inelastic demands for many commodities, shifts in supply have resulted in wide sweeps in prices. And what is more, high levels of production have often been associated with low total returns from sales. The logical question then arises as to whether controlled production will net greater income than full, uncontrolled production.
4. The individual farm is a small competitive unit operating in a general structure of larger units with varying degrees of market control. Full production to the individual farmer is logical since, being so small, he can sell all of his output at the same price. He, acting alone, has no economic power to affect prices. In contrast, the farmer has always believed that the marketing machinery does have some degree of control over prices and takes advantage of him. He looks upon the large share of the consumer's dollar taken by marketing agencies as evidence of this. How to meet "power with power" in the market place has become a major issue.

## AGITATIONS OF THE 1920'S

Within two and a half years after World War I, prices farmers received had fallen 52 percent from their postwar peaks. Prices paid by farmers had declined only 18 percent. Net farm income in 1921 was only 39 percent of its 1919 peak. Though prices received recovered somewhat, the relationship between prices received and prices paid remained about 15 percent below the prewar relationship throughout the 1920's.

The cry for agricultural relief arose out of this difficult price and income situation. Several bills which were poured into the legislative hoppers by farm-sensitive Congressmen aimed at relieving the situation. However, the one principal plan which was debated throughout the decade of the twenties was based upon separating the domestic and foreign markets. Domestic prices were to be pegged at a "fair" level. All that could

not be sold domestically at that level were to be purchased by the government. This excess amount would then be sold on the world market for what it would bring. High tariffs were to protect the domestic markets from foreign imports. The government loss between the domestic support prices and the world prices was to be shared equally through various methods among agricultural producers. The net price to farmers would then be the domestic support prices minus the losses suffered in the world market. This basic idea was introduced into Congress as the McNary-Haugen Bill. The bill passed both houses of Congress both in 1927 and 1928 but was vetoed both times by President Coolidge.

Though the McNary-Haugen plans never became law, they merit attention because they represented the opening guns of the battle to guarantee a "fair" price for agriculture. They also laid the groundwork for the concept of splitting markets which later was to be worked out domestically within the framework of marketing orders. In order to see how such a program was supposed to benefit agriculture we must fall back upon our demand curve analysis. The assumption was that domestic demand was inelastic while the world demand was elastic or at least less inelastic than domestic demand. By restricting amounts and raising prices, the total returns from the domestic market could be maximized. If the world market demand for U. S. farm products were more elastic, selling more there would increase the total returns. Because the domestic price level would be substantially above the world price level, the total dollars for the wheat crop would be increased. This idea is not dead. In the early 1950's proposals along this line were seriously made again.

In 1929, with the passage of the Agricultural Marketing Act, emphasis changed from the two-price approach of the McNary-Haugen plans to one of "orderly marketing." The basic philosophy of this law was that agricultural problems were due to the disorganized methods of distribution. If products could be stored by farmers and released in an orderly fashion throughout the year, higher price and income levels could be secured. As a means of obtaining this goal, farm cooperatives were to be vigorously encouraged.

The Federal Farm Board was established to put the program into effect. The Federal Farm Board was given an initial appropriation of 500 million dollars to undertake loan-storage programs to stabilize farm prices. However, the newly established Board was just taking its first tottering steps when the depression struck. By 1933, it had spent all of its funds, acquired large stocks of commodities, and prices still had fallen drastically. The Board died when Congress did not grant it additional funds.

## THE DEPRESSION DEVELOPMENTS

Starting in 1930, prices began to slide again. By early 1933, prices received by farmers were 62 percent below 1929. Prices paid, again lagging behind, were only 32 percent lower. Net farm income in 1932 was 70 percent below 1929. And this decline was taken by an agriculture which had not been considered particularly prosperous anyway. For those whose memories are only of the recent price levels, a look at the depression prices of several commodities will help in gauging the seriousness of the situation. The United States average farm prices for several commodities in 1932 were as follows:

| | |
|---|---|
| Corn | $ .32 |
| Oats | .16 |
| Wheat | .38 |
| Cotton | .07 |
| Milk | 1.28 |
| Hogs | 3.34 |
| Cattle | 4.25 |

Though we are here concerned with agricultural developments, we must not overlook that the whole country was on its economic knees. Businesses failed; banks shut their doors; one out of every four workers was without a job. The agricultural program which developed was only a part of a broad program which included social security and unemployment insurance for workers, special legislation for banks, and the National Industrial Recovery Act for other businesses. The latter, NRA as it was widely known, was designed to control "bad" competition and foster "good" competition. The bad competitor was in reality one who competed on the basis of prices. The good competitor was one who largely restricted his efforts for securing more business to the more gentlemanly nonprice techniques. NRA encouraged industries to join together and formulate "fair" trade codes and to take cooperative action to police their trade against "unfair" competition. After a short life NRA was declared unconstitutional but the issues it raised left its mark both on the marketing structure and the men who operate it.[1]

The legislative development of the 1930's signaled a change in the basic approach to the problems of a depressed agriculture. During the 1920's the two-price system was offered as a device by which our agricultural production could have a protected domestic market and yet secure what

[1] See A. J. Eddy, *The New Competition* (Chicago, A. C. McClurg, 1915), and O. F. Rost, *Distribution Today* (New York, Whittlesey House, 1933), for interesting contemporary writing in this area.

it could get from the world market. The Federal Farm Board proposed to solve the problem by helping farmers to level out the peaks and valleys of their marketings and thereby stabilize the prices of agricultural products. The basic approach which was now to be followed was to reduce production. In this manner, demand and supply were to be brought into balance at prices which were "fair" to farmers. Though many camouflaging terms were used, the basic concept of curtailing production prevailed.

The pressure for all-out production during World War II halted the desire to restrict output. Agriculture during this war period experienced unprecedented prosperity. However, with the growing agricultural problems in the postwar period, the old question again came to the fore. And this question simply stated is: Will consumers absorb the full productive capacity of the agricultural plant at prices which will give agriculture a reasonable degree of prosperity? It is to the definition of the fair price and the mechanics for securing it that we now give our attention.

*Development of Parity*

The Agricultural Adjustment Act of 1933, established the criterion for a fair price for agriculture. Parity, or fair price, was that price which would give agricultural commodities the equivalent purchasing power over articles which farmers bought that they had in the base period. The base period for the great majority of products was established as the five-year period from August, 1909, to July, 1914.

To find the parity ratio for agriculture as a whole was then a simple process as follows:

$$\frac{\text{Current index of prices received (1910–14 base)}}{\text{Current index of prices paid (1910–14 base)}} \times 100 = \text{Parity ratio.}$$

Obviously, the parity ratio for 1910–1914 would be 100. Whenever prices received by farmers did not rise as much—or fell more—than prices paid, the ratio would fall. Conversely, when prices received rose more—or fell less—than prices paid, the ratio would rise.

The parity price for an individual commodity also could be calculated as follows:

$$\frac{\text{Average price received for the commodity during 1910–14} \times \text{current index of prices paid}}{100} = \text{Current parity price.}$$

When the actual current price was below the price obtained from the above calculation, the commodity was below parity. The market price was

not one which would give the commodity the same purchasing power as it had in 1910–1914.

As time passed, it became obvious that such a formula had a great shortcoming. There was no provision for taking into account any changes which had taken place since 1910–1914 in either the demand or the supply of the commodity. For example, the parity or fair price of horses in 1953 under the above formula would still be the price which would be comparable to the purchasing power which horse prices represented in 1910–1914. But with modern mechanized farming and the reduced demand for horses this was a ridiculous goal for a fair price. The example is an extreme one, but it shows the problem of handling change when only a fixed period in the past is used.

In 1948 the parity formula for individual commodities was changed. Though the desired purchasing power was still tied to the 1910–1914 base, the base period for prices of a commodity was to be calculated for the most recent ten years. Therefore, the formula for calculating the current parity price of a commodity would be as follows:

$$\frac{\text{Average price of commodity, most recent 10 years}}{\text{Average index of all prices received, most recent 10 years}} \times \text{Current index of prices paid} = \text{Current parity price.}$$

A little experimentation with the above formula will demonstrate how changes which have occurred in the supply-demand pattern of a commodity are incorporated into the parity price. For the parity ratio for all agricultural prices, calculations remain unchanged, since 1910–1914 is still the bench mark for over-all purchasing power.

*Support Programs*

Here then is a formulized method for arriving at the "fair" price. But merely doing the calculations does not make the price on the market equal parity!

The Commodity Credit Corporation (CCC) was set up in 1933 to take over the activities of the old Farm Board in supporting prices. Two broad programs have been undertaken by the CCC to support prices. In the case of most storables, the *nonrecourse loan* was used. Under this system, the farmer "seals" his commodity in acceptable storage. He then obtains a loan reflecting the amount of the support price. If the market price rises above the loan rate, the farmer may sell and repay the loan. If the market

price never reaches the loan rate, the farmer delivers the commodity to the government and thereby fulfills his obligations. This has been the basic program used to support prices for most grains, tobacco, and cotton.

The other major program has been one of direct market purchase. In this case, the government buys directly from processors and handlers at prices reflecting the desired levels of support prices. The CCC then attempts to dispose of these commodities through other "noncompeting" outlets. If they cannot be disposed of, it either stores them if possible or, as a last resort, destroys them. This program has been used for a wide variety of products such as eggs, turkeys, butter, and beef.

Until 1937, the levels of support were at the discretion of the administration. In 1938, support levels as definite percentages of parity for a few products were written into law. After our entry into World War II, the Steagall Amendments set the support level at 90 percent of parity for a wide range of products. One might say that the "90 percent," which later was to become so controversial, was a war baby!

The level of support—not the parity idea—has become the controversial issue. In 1948, Congress passed a new law which provided for flexible support levels instead of the fixed 90 percent. Under its provisions, the support level was on a sliding scale which varied inversely with the production of a commodity. If the production was below the average of a recent period of years, the support price would be at a higher percent of parity. If the production was above this average, the support level would be at a lower percent of parity. A fixed high level of support ignored the fact that it would take lower prices to move a large supply into consumption. It also ignored whatever effect prices might have on guiding future production. The flexible provisions were an attempt to provide support and yet recognize the economic jobs that fluctuating prices are presumed to perform.

The law of 1948 never was allowed to become effective, as it was superseded by a new law passed in 1949. In the Agricultural Act of 1949, the "basic commodities"—corn, cotton, wheat, tobacco, rice, and peanuts—were to be mandatorily supported at a fixed 90 percent of either parity formula, which ever was higher. This was to be in effect for a limited period of time after which the revised parity formula and the flexible support provisions were to become effective. A few other commodities were to be mandatorily supported at flexible levels ranging from 75 to 90 percent of parity. The great bulk of perishables and nonbasic storables were left without any definite support provisions. The Secretary of Agriculture could support these latter commodities at his discretion and in light of funds available to him. Succeeding amendments, however, have extended

the 90 percent support provisions, and the flexible support provisions for basic commodities did not become effective.

In each of the laws, provision was made for compulsory production controls when production exceeded a predetermined level. The controls were of two levels in severity. In instances of moderate overproduction, farmers would receive an acreage allotment which would reduce the acres planted. Compliance with these allotments would be voluntary, but only those farmers who did comply would be eligible for price support loans. In years of severe oversupply, however, marketing quotas would be used. Under marketing quotas, the extent of necessary reduction would be announced and a referendum of affected farmers held. If a majority of the farmers voted in favor of the scheduled restriction, compliance with its provisions would be compulsory for all farmers. Penalties then could be inflicted on those farmers who did not comply. If a majority did not favor the restriction, it would not go into effect and the support prices would be sharply dropped to lower levels.

*Surplus Disposal Programs*

Congress has spelled out the methods and prices at which the CCC can dispose of its stocks which have been accumulated from the loan and purchase programs. If market prices exceed the support levels plus CCC cost, the CCC can sell its holdings in the normal marketing channel. If market prices never reach this level, it can move its holdings into other "noncompeting" outlets.

Surpluses have been available for use in foreign aid and relief programs. The School Lunch Program provided that stocks purchased in price support operations could be used for distribution to schools for supplying low cost lunches to the children. For a time the Food Stamp Program attempted to move surplus commodities by increasing the consumption of low income families. Under the Food Stamp Plan, stamps were issued free to poor families to "spend" in addition to their regular food expenditures. These stamps were usable as money for purchasing designated commodities which were in surplus supply. Under such an arrangement these families could then consume these additional commodities at no additional cost over their usual food expenditures.

As an outlet of last resort, some food perishables have been offered at very low prices for use as livestock feed. And in some unfortunate and highly publicized instances, commodities have been either lost through spoilage or destroyed.

*Marketing Orders and Agreements*

The legislation of the 1930's also permitted farmers and processors to organize and establish marketing orders and agreements for exercising control over the marketing of commodities and be exempt from antitrust prosecution. This was an effort to answer the problem of how to establish power of agricultural producers to offset the market power, real or assumed, of handlers and processors. Such agreements and orders have found wide use in the marketing of fluid milk and commercial fruits and vegetables. A detailed discussion of the extent and operation of fluid milk marketing orders will be found in Chapter 16. Here we shall observe what this approach attempts to do by inspecting its development in fruits and vegetables.

In general, the marketing order for fruits and vegetables set up the machinery for the control of production and how it is to be marketed. An estimate is made of how much the various consumers will take at the price considered to be fair. An attempt is then made to limit the amount offered for sale to this estimate. In many cases, only a given percentage of the crop will be harvested for market. In addition to the total volume control, the proportions of the total which will go into various geographic regions or into various uses, such as for canners or for fresh consumption, are controlled. The quality to be marketed also can be regulated. Penalties are provided to force compliance of the order's provisions by growers and handlers.

The Walnut Marketing Agreement is one of the oldest and more successful marketing control programs, having been in continuous operation since 1933. The following explanation of its operation will illustrate how such programs are administered: [2]

> The program is administered by a Control Board representing both growers and handlers. Funds to cover the expenses of the Control Board are acquired by assessing each handler one-tenth of a cent for each pound of walnuts handled. This board is the agency of the Secretary of Agriculture in administering the order. It prescribes pack specifications including minimum standards of quality and no handler is permitted to handle any walnuts except those certified as merchantable by the Board.
>
> The Board prior to the beginning of each marketing year estimates both the total potential supply and the total trade demand. In line with these estimates the Secretary of Agriculture then establishes the salable and surplus percentages of merchantable walnuts which he believes will result in the greatest total returns to growers. The salable percentage represents the quantity that can

[2] Extracted from H. C. Kiger, *California Walnut Growers' Association*, Farm Credit Administration, USDA Circular C-146, May, 1952, pp. 21–24.

be legally sold on the domestic in-shell market. The surplus percentage is either shelled or exported. Growers normally get a greater return from walnuts sold in-shell than from those sold in the shelled market. The percentage of diversion from the domestic in-shell market has ranged from 9 to over 30 percent of the total crop over the years.

Such allocation increases total returns, since shelled walnuts are a year-round item and customers do not shift from in-shell to shelled purchases because of small price changes. Also percentage changes in supplies in the two markets do not cause equal percentage changes in their prices. The control program does not materially affect the total supplies of walnuts available to consumers, but it does control the form in which they are sold in order to get maximum returns for growers. Without these allocations, prices of walnuts of comparable quality in the two outlets would tend to be the same; however, the program controls the supply going into each outlet which results in a two-price market.

Under such unified action, producers—cooperatively organized for order participation—may have the power to affect the price they receive. They now have the prerequisite control over production for securing monopoly returns. Much of the justification of such control rests upon the assumption that there is not one demand curve of a given elasticity for the commodity, but several curves of different elasticities. There may be different curves for different cities, different qualities, different uses, and different times of the year. By controlling the amounts offered each outlet, different prices may be established which will maximize the total returns from all. Generally it is the two-price system of foreign and domestic markets proposed in the twenties applied at home and carried to much greater refinements.

Basically, the technique involved here is one of price discrimination. Within the framework of whatever other goals the discriminator may have in mind, profit maximization will be striven for by following two lines of action. First, the general market must be divided into two or more submarkets. This subdivision must be made in such a manner that sales at a low price in one market will not attract buyers away from the other higher priced market or result in resales out of the low price market into the higher priced market by other groups seeking to take advantage of the several price situations. This is quite possible whenever one of the markets is a domestic market protected by tariffs, quotas, or transportation cost barriers which prevent re-entry of the exported portion. It is also possible whenever the product itself is so differentiated in the several markets that consumers actually consider it as two different products. Such evidently is the case in the above illustration of the markets for in-shell and shelled walnuts. Such also is the case in the techniques of pricing milk according to its use which will be discussed later.

Secondly, the different elasticities of demands in each market must be considered in adjusting prices in order to maximize profits. If demand is relatively inelastic in one market, limited quantities will be withdrawn, bringing about a proportionately higher price and therefore a greater total dollar return. These amounts taken from the market of inelastic demand will be added to the offerings in the market of more elastic demand without much reduction in the price so that total dollar returns will be increased. This substitution between markets will be carried to the point where the addition to net revenue (after costs have been met) obtained from selling one more unit will be the same in each submarket. Here net returns or profits will be maximized and any further shifting of products from one submarket to the other will only result in profit reduction. Of course, such exact adjustments for maximum profit can rarely be achieved with the imperfect knowledge and limitations of the real market. But some advantage can be acquired whenever such discriminative monopolistic practices can be employed.

*Price Controls*

Practically all agricultural legislation has dealt with how to raise prices. During war periods, however, the problem has been how to keep prices from rising too fast or too high. The Office of Price Administration (OPA) during World War II and the Office of Price Stabilization (OPS) during the Korean War are the two most recent direct attempts to control rising prices.

In initiating a control program, prices are "frozen" as of a given date by government order. From these freeze points, adjustments up or down are made as needed. The enforcement technique is simply to make it illegal to charge above the legal levels. The simplicity of the technique, however, belies the simplicity of the job. Effective price control is immeasurably complex. Agricultural products have presented real headaches in efforts to control them. With wide annual and seasonal variation in production, differences in quality, and numerous and small producers, price ceilings always seemed to be out of adjustment at some place or time. To secure their operation, a rationing and subsidy system had to be devised. A continuing flow of orders from the central control agency was necessary to allocate available supplies among those who needed them. Though breakdowns and confusion occurred, price control will probably remain a much used technique in times of inflationary duress.

## EFFECT OF PROGRAMS ON MARKETING

Whether or not such programs as the above are socially desirable is not of particular concern here. Neither need the consideration of such program details such as fixed versus flexible supports receive our attention as such. We are interested in the impact of these various programs on the marketing of farm products. And they do have important effects. These we will attempt to summarize briefly.

### *Efficiency of the Pricing Mechanism*

If we accept the model of working competition as resulting in an efficient pricing mechanism, then any departures from this ideal will give us something less desirable. Government programs which attempt to limit price fluctuations through floors and ceilings make the threefold direction job of prices more difficult. Price floors maintained above the market level of prices will move commodities into government ownership instead of into consumption. The government will become the most profitable outlet. Price ceilings below market price levels will make some sort of ration and subsidy system necessary in order to allocate available supplies in some fair fashion among those who need them.

Many of the price programs are undertaken to offset shortcomings or undesirable features of the unregulated price mechanism. Most of the so-called orderly marketing schemes, including storage programs, aim at eliminating some of the drastic short-run supply changes which cause violent fluctuations in prices. Marketing agreements fundamentally attempt to equalize market power in markets which were not completely competitive in the first place. It is wrong to evaluate all government price programs simply against the assumption that the previously existing situation was one of perfectly functioning competitive markets. Our discussion in the last two chapters demonstrated that this assumption is not always valid. However, neither can a government program be assumed to be the best alternative for correcting the situation. Probably the only safe way is to evaluate each proposal on its own merits.

### *Efficiency of the Marketing Machinery*

Many of these programs result in a change in the operation of the marketing processes. The government loan programs encourage farmers to store much of a crop that normally would have moved forward for holding at terminal markets. The availability of the loan means that an entirely new factor must be considered in the farmer's decision as to

building additional farm storage. Previously he had to balance the probability of seasonal gains against costs. Now he must consider how much he will lose if he does not have the storage which would permit him to participate in the loan programs.

The use of a price ceiling and ration program often disturbs the normal marketing channel. An example of this was the meat situation when effective ceilings were in force. Large packers normally processed and moved a major portion of the supply. However, because of their size and prominence they had to follow price regulations very closely. Many small concerns, however, found it much easier to violate the regulations without penalty. Under such black market conditions, the marketing channel definitely was changed. Large packers found themselves outbid in the livestock markets by other interests who were selling at more advantageous prices. Large packers found themselves without a lawful source of meat. Some of the retail food chains acquired their own packing houses during this period in order to assure themselves of regular supplies. This example of market channel disruption could be multiplied many times.

All programs need not necessarily adversely affect marketing agencies and the consuming public. Too often programs which attempt to regulate agricultural production or to support farm prices have been assumed to raise automatically the price of food at the consumer level. This need not be so.

We have seen that the farmer over the years has received less than half of the consumer's food dollar. The remainder has gone to pay the various costs of processing and marketing the finished product. We have also seen that a basic cause for much of this marketing cost is due to the nature of both agricultural production and the product itself. High risk costs, high spoilage losses, and high storage and financing costs are due to some extent to the widely fluctuating nature of agricultural production. Support programs which may tend to limit price fluctuations for the producer will also reduce them for processors and handlers. Violent production fluctuations of such products as fruits and vegetables may be reduced. Such developments could result in less risk from fluctuating prices as well as from excessive spoilage which might occur in a feast-and-famine situation. Market movement and storage operations might be undertaken in a more orderly manner. Some of the speculative operations might be reduced. In such instances as these, marketing charges might be reduced.

Many of the programs have stimulated more research and an improvement in the informational data available to an industry. After all, if a marketing order is attempting to capitalize on different demand curves,

one must have the necessary data to analyze the situation and estimate the curves.

Again, little generalization can be made as to the effects of these various programs on marketing. Cost reducing as well as cost increasing effects are possible. Again the effects must be analyzed commodity by commodity, program by program.

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CHAPTER TEN

# *Standardization and Grading*

Standards are yardsticks of measurement. In agricultural marketing two types of standards are of major concern—the standards for weights and measures and those for quality. Grading refers to the sorting of products into the various categories (referred to as grades) which are established by the standards for quality. For example, standards have been established for the various qualities of grain. In grading grain, it is sorted into the various grades which have been set up.

In a complex marketing machinery, the possibilities of waste, confusion, and downright chicanery are great. Keeping such practices to a minimum is one of the purposes of an adequate and workable system of standards and grades. As one author phrased it, standardization furnishes the ethical basis for making a transaction. Without such a system, the rule "caveat emptor" ("let the buyer beware") must prevail along with all of its confusion and unfairness.[1]

## IMPORTANCE OF STANDARDIZATION

### *Weights, Measures, and Containers*

The standardization of weights and measures has been so well accepted by the civilized countries of the world that it seldom receives any attention. However, without such standards, modern marketing would be next to impossible. Whether the English or the metric system is used, the units of length, area, volume, and weight are rigidly standardized. Conversion tables for movement from one system to another are also uniformly accepted. Were this not so, one could picture the trade confusion which would exist if the weight of the pound or length of the yard varied from place to place or time to time.

[1] Edward A. Duddy and David A. Revzan, *Marketing, An Institutional Approach* (New York, McGraw-Hill, 1947), p. 59.

Containers for many items in the wholesale trade are also standardized with the aid of federal and state legislation. However, there is little container standardization at the retail level, with the result that consumers are often confused and misled. Federal law requires that quantities must be plainly marked on food packages entering interstate commerce. However, packages are often designed to deceive the purchaser. Examples of this can be found in any grocery store by comparing the size of the package with its weight or volume. Many bottles are made to appear larger by the use of extra thick or false bottoms or by the design of the sides. Many packages are intentionally designed to be larger than necessary for its contents.

## *Quality*

It is in the area of quality that some of the greatest standardization problems of agriculture arise. What should be the criteria for various grades of quality? How many grades should there be? How uniformly interpreted and widely accepted are the standards for grading from one area to another or from one grader to another? What terminology should be used? Should the standards be compulsory or permissive?

All of these are questions which are important to agriculture and agricultural marketing agencies. In many instances, they are questions which are currently answered unsatisfactorily. But the fact remains that workable answers are necessary if the marketing machinery is to function smoothly and efficiently. It is this area of quality standardization and grading which will be discussed in the remainder of this chapter.

### *Early History of Standards* [2]

Our grading standards have evolved hand in hand with the commercialization of agriculture. Some have been developed by trade groups and then have been formalized by federal and state agencies. Others have come about through the results of research directed toward the establishment of standards. Practically all have been changed with the passing years as weak points became evident. Changes are still being made.

In the early days, each grain market had its own grades and grading methods. Different early standards for No. 2 corn required that the corn "be dry," "reasonably dry," "have not more than 16 percent moisture," or "have not more than 15.5 percent moisture." Study of the terminology used in grading grain in 1906 disclosed 338 names or grade titles being used. There were 133 designations for wheat alone.

[2] Much of this material is adapted from an article by C. W. Kitchen, "Standardization and Inspection of Farm Products," *The 1940 Yearbook of Agriculture*, pp. 667–683.

The early cotton trade was also plagued by grade confusion. The term "middling" apparently was adopted from its use in England. Such terms as "good," "fair," and "ordinary" were in general use about 1825. In 1847, efforts were made to adopt a standard classification system, but this failed within a few years.

Livestock once were sold on the basis of the girth of the belly. In the literature of the 1850's, hogs were sometimes classified as "fat distillery-fed" hogs and "fat corn-fed" hogs. In most of the early market reports, the point of origin was indicated as one method of classifying the animals. Such terms as "prime," "choice," and "good" were not uniformly used either within an individual market or between two different markets.[3]

The lack of accepted fruit and vegetable standards resulted in especially chaotic trade conditions. These very perishable products were shipped long distances, and there was no intelligible basis for price comparison and the settlement of damage claims. Some growers attempted to secure recognition by placing their names on all shipments. In this way, they hoped to establish a reputation which would give them market premiums.[4]

Such situations resulted in many unfair practices and abuses. Not only did producers suffer, but the middlemen of the trade also were often defrauded. In most instances, pressure developed for reform of the grading system from within the trade itself. Trade groups and organizations attempted to systematize nomenclature and grades. Generally, however, real permanent progress was not made until the federal government stepped in to coordinate the efforts to improve the grading system. In 1907, Congress appropriated funds to study federal standardization. The passage of the Cotton Futures Act in 1914 and the Grain Standards Act of 1916 initiated a series of laws which have gradually broadened the area of federal responsibility in promulgating uniform standards.

### *Advantages of Standardization*

The use of uniform standards for setting up the different grades of quality by the trade has many advantages to offer. These may be enumerated as follows:

1. It results in more meaningful price quotations. The consumer is assumed to direct production through the pricing mechanism. This is not possible if prices do not have specific meanings throughout the market-

[3] A more complete discussion of the progress of livestock grading can be found in A. A. Dowell and Knute Bjorka, *Livestock Marketing* (New York, McGraw-Hill, 1941), ch. XIV.

[4] See Raymond L. Spangler, *Standardization and Inspection of Fresh Fruits and Vegetables*, USDA, Production Marketing Administration, Misc. Publication 604, 1946, for a more complete discussion of these early problems.

ing channel. By having widely accepted grades, price quotations for a given grade of a commodity on one market can be compared to similar quotations on other markets. If the producer is acquainted with the quality standards, he can know the relative worth of his product.

2. It makes possible the sale of goods by sample or by description. If the standards are widely understood and uniformly applied, products can be bought and sold sight unseen. Description has uniform meaning. Most grain is sold upon the basis of a small sample which represents a carload. Fruit which is sold at terminal auctions is usually sold on the basis of inspection of one box or crate out of the larger standardized lot. Neither of these sample sales would be possible if the buyer had no confidence in the grading system.
3. It enables the pooling or intermingling of products for further shipment. Without a grading system, the identity of Farmer Brown's wheat would have to be maintained throughout the marketing channel if the ultimate value were to be accurately reflected. With a workable grading system, his wheat can be graded and its value established immediately by referring to price quotations for the particular grade. Then it can be pooled with wheat of many other farmers for shipment to the central market and millers.
4. It facilitates financing of the marketing of products. Loans are easier to obtain if the product is graded, since it is possible to secure a more accurate estimate of the value of the collateral offered. Financing agencies will often advance a higher proportion of the collateral value of graded products for this same reason.
5. It may reduce relative transportation costs. The settlement of railroad and warehouse claims for damage is facilitated, since the value of the commodity can be more nearly determined. It may reduce the risk from spoilage, since the poorer quality products can be sorted out and utilized more quickly or nearer home. It may also result in a relatively cheaper transportation bill if only the higher valued product is shipped forward while the lower valued products are sold nearer home.
6. It may increase the demand for certain products. It is possible that consumers will not buy as much of products which are uneven in quality or which have been misrepresented to them. Grading should result in a greater uniformity and less misrepresentation of a product.

## DETERMINATION OF STANDARDS

### *Objective of Ideal Standards*

The principal objective of an ideal standard should be *to aid the consumer in telling the producer what he considers desirable in a product for*

*the particular use to be made of it.* Ideal standards set up a chain of information between the consumer and the producer.

Grading of agricultural products is a method of differentiation of the products to meet the various desires of the consumers. We have learned that consumers are characterized by a large range of incomes and preferences. Some desire and can pay for the highest quality. Others must be satisfied with a somewhat lower quality at a lower price. A grading system attempts to differentiate the product in such a way that the various consumers are tapped for all that they will pay. Or from the consumers' point of view, a grading system attempts to aid the consumer in obtaining the particular product he desires. The best grading system will be such that it will move the greatest total amount into consumption and secure the greatest total price for that amount.[5] The purpose of grading is *not* to assure the marketing of only top quality products. Those who conceive a grading system as a vehicle for the elimination of lower quality products are ignoring the wide range of consumer preferences and uses which exist.

The major problem in developing grading standards then becomes one of determining differences in products which are economically significant and then developing methods for measuring these differences in the products. Only differences which users are willing to pay for are pertinent to the establishment of grades. Whims and desires not backed by the willingness to pay are not justifications for grade differentiation. Neither are the opinions of a few "experts" of what *should* be desired workable foundations for grades.

### *Criteria for Good Standards*

The development of a system of perfect and ideal standards is highly improbable. Each agricultural product presents different problems. Realizing that it is very improbable that any standard will meet them all, the following may be used as criteria upon which to judge the adequacy of standards.[6]

1. Standards should be built on characteristics which the users consider important as indicated by their willingness to pay different prices, and these characteristics should be easily recognizable.
2. Standards should be built on those factors which can be accurately and uniformly measured and interpreted. If the major part of the standard

[5] L. J. Norton, "Differentiation in Marketing Farm Products," *Journal of Farm Economics*, Part 1, August, 1939, pp. 587–594.

[6] Discussion of this area and many other articles pertinent to the subject of standards and grading can be found in the report of the 1951 Marketing Research Workshop, *Market Demand and Product Quality*, USDA, Agricultural Research Administration, processed.

consists of subjective measurements, uniform application by different graders or at different points will be very difficult.

3. Standards should use those factors and terminology which will make the grade meaningful to as many users of the product as possible. The ideal situation would be that in which the same grade terminology is used at all levels of the marketing channel from the consumer to the producer. This, of course, is complicated by the fact that many products have several different uses.
4. Standards should be such that each grade classification includes enough of the average production so as to be a meaningful category on the market. Though grading standards should be consumer oriented, they cannot ignore the real facts of production. Consideration must be given to the quality of the product which is produced. It is of little purpose to have a standard for the top quality set up in such a fashion that very little of the actual production can meet the standards.

Probably the best practical test of the adequacy of standards is their acceptance and use by the various marketing agencies. If the grading standard is widely used, it is probable that the standards are fairly adequate and economically meaningful. However, if large segments of the trade do not use the standards, then it usually may be assumed that some of the criteria are not adequately met.

## PROBLEMS OF AGRICULTURAL STANDARDIZATION

Much of the grading system for agricultural production needs critical examination. In a recent report of the Agricultural Research Administration, which is in charge of administering federal marketing research funds, it was reported that about 12 percent of the nearly 6 million dollars spent in marketing research was used for consumer preference and grades and standards studies.[7]

### *Lack of Relationship Between Price and Quality*

It has become increasingly evident that for many commodities there is little or no relationship between prices paid by consumers and the grade of the product. This, of course, means that the principal objective of grading standards is not being fulfilled.

A study of the relationship between the labeled grade of tomatoes and their actual grade revealed that, regardless of price, "fancy" tomatoes could

[7] *Report of Activities Under the Research and Marketing Act*, USDA, Agricultural Research Administration, 1951.

not be obtained with any degree of certainty. Of the tomatoes labeled "fancy," only 20 percent met the grade (Table 1). A study of potatoes sold in New York City concluded that there appeared to be no significant relationship between prices which consumers paid for potatoes and the proportion of grade defects. There was little evidence that consumers were discriminating in their choice of potatoes insofar as grade was concerned.[8] A study of the relationship between prices paid to creameries for butter and the grade of butter sold found a significant relationship of higher prices to the higher quality product. However, the differential was so small that the question was raised whether the differential was adequate for creameries to try to produce the higher quality butter.[9]

TABLE 1. *Reliability of Labels in Describing the Contents of Canned Tomatoes*

| LABEL STATED GRADE | AVERAGE PRICE | ACTUAL OFFICIAL GRADE | | |
|---|---|---|---|---|
| | | FANCY | EXTRA STANDARD | STANDARD AND LOWER |
| | CENTS | PERCENT | | |
| Fancy | 12.5 | 20 | 61 | 19 |
| Extra standard | 9.9 | 6 | 63 | 31 |
| Standard | 8.4 | 1 | 40 | 59 |

SOURCE: F. D. Gaylord and K. I. Fawcett, *A Study of Grade, Quality and Price of Canned Tomatoes Sold at Retail in Indiana*, Indiana Bulletin 495, 1944.

*Determining Consumer Preferences*

Findings like the above mean that the foundations of some standards are faulty indeed. Many standards have been developed by food technologists. In some instances, this has resulted in standards which are built upon the characteristics which these scientists deem desirable. But what are significant consumer preferences? This question is a difficult one to answer in meaningful terms. For example, the following list of important quality characteristics was developed for fruits and vegetables.[10]

1. Eating quality (flavor, texture, viscosity, aroma).
2. Cooking quality (texture, consistency, color, aroma).
3. Nutritive quality (vitamins, minerals, caloric values, protein).

[8] Russell L. Childress, *Grade Qualities of Potatoes in Retail Stores, New York City, 1948*, New York Bulletin 707, 1950.

[9] A. G. Mathis and Donald E. Hirsch, *Butter Pricing by Iowa Creameries*, USDA, Farm Credit Administration, Circular C-136, 1950.

[10] Report of 1951 Marketing Research Workshop, *op. cit.*; Report of Work Group IV, processed.

4. Eye appeal (color, shape, defects, cleanliness).
5. Freedom from harmful or undesirable substances.
6. Amount of waste and ease of preparation (decay, bruises, mechanical injury, varietal characteristics, cleanliness).
7. Keeping quality (maturity, ripeness, disease, decay, bruises, and varietal characteristics).
8. Size.
9. Uniformity.
10. Suitability for a particular use.

All of these are important characteristics of fruits and vegetables. But for which will the consumer pay a premium? Which can be uniformly and accurately measured?

*Measuring Grade Factors*

In measuring the various grade factors, the techniques used may be sensory, physical, chemical, and microbiological. The latter three techniques are usually objective in nature and can be uniformly carried out by trained graders. Sensory tests, however, are a different matter. These depend upon the grader's senses of sight, taste, smell, and touch. Standards of many commodities are built largely on these subjective sensory tests. Dairy product standards lean heavily on the sense of taste. The standards for meat and many fruits and vegetables have color as one of the important characteristics. In these situations, the standardization of the sensory abilities of the individual grader is, in fact, the most important factor in obtaining uniform application.

Generally speaking, the more mechanical and objective the methods for grading, the more widely accepted are the standards by the trade. One of the contributions of the other sciences in recent years has been the replacement of some of the sensory tests with chemical tests and mechanical devices. Photoelectric colorimeters, reflectometers, and other devices have been developed to replace the old color chart comparison method. Tenderometers are now used in measuring texture and consistency of peas and lima beans and a few other vegetables. The succulometer is a device used for measuring the juice content of sweet corn. The measurement of tastes and odors has presented researchers with difficult problems; however, some chemical tests are being developed which may aid the graders.[11]

[11] For more detail on these developments, see the Report of the 1951 Marketing Research Workshop, *op. cit.*, and also the following articles in *Marketing Activities*, USDA, Production and Marketing Administration: "Better Than the Human Touch," July, 1950; "Simple Refractometer Developed," July, 1950; "Technical Research to Back Tobacco Standards," May, 1949; and "Good Butter Tastes Good," March, 1949.

*Determining the Limits of Grades*

How many grades should there be? This is an extremely important question since it can influence the total amount received from the total production. Within limits of the consumer's willingness to pay premiums for certain qualities, the amount which will fall in each grade can be changed. However, agricultural products do not fall into classifications with definite "breaks" between them. Instead, the quality of agricultural products varies throughout a wide range. It has been suggested that most products have a quality distribution very similar to the normal frequency distribution curve.[12] This can be illustrated by the hypothetical situation shown in Figure 1.

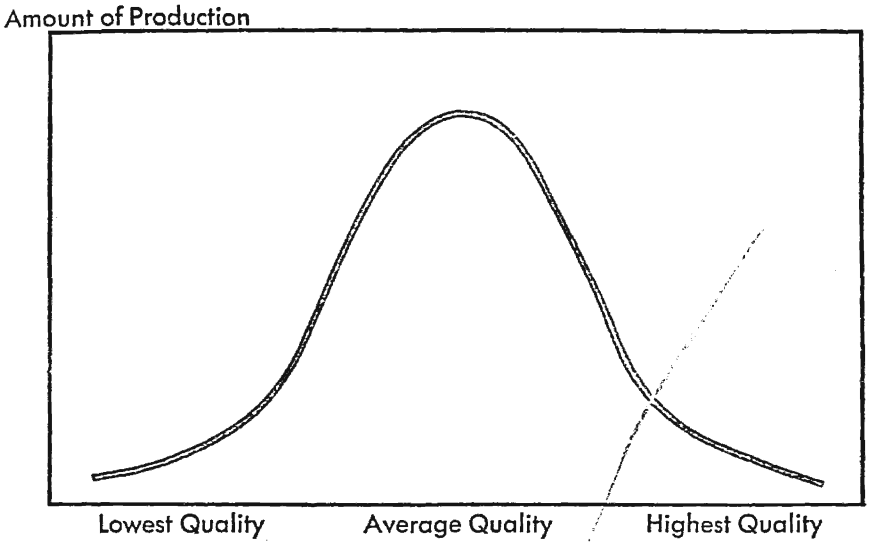


FIGURE 1. *Quality distribution of the total production of a hypothetical product.*

One of the criteria for good grades is that there be enough of the normal production falling in each grade to make it a meaningful market category. How many grades should there be and where should the boundaries of the grades occur in the commodity illustrated in Figure 1? There are some products of very low and some of very high quality. Most, however, fall somewhere between these two extremes.

It also is evident from this illustration that the grade boundaries will be "zones" rather than clear-cut lines. The more the grade factors are meas-

[12] H. E. Erdman, "Problems in Establishing Grades for Farm Products," *Journal of Farm Economics*, February, 1950, p. 15.

ured subjectively, the wider will be the zone of indecision. This has led to a system of tolerances in standards. For example, grades of fruits and vegetables usually provide for 5 to 10 percent of off-grade specimens.

There are situations in which the grade designations appear too restrictive. Eggs appear to be an example. A study showed that housewives, when faced with a choice between "A" and "B" quality eggs, actually chose about as many "B" eggs as the better egg "A." When faced with the choice between "A" and "C" quality eggs, however, most chose the "A." [13] Have the grade boundaries been incorrectly chosen in this case?

The quality of the production of a commodity also changes from year to year. The curve in Figure 1 might shift either to the right or to the left. One year might find a larger amount of higher quality products and a smaller amount of lower quality products. Or the situation might be reversed. Such conditions make it extremely difficult to maintain consistent standards. Again, this is particularly true when grade factors depend upon subjective measurement. For example, if the apple crop is very poor in quality, very few apples would meet the top grade requirements if the standards were rigidly adhered to. Under these circumstances, the pressure is strong to "reach a little farther down" for the top grade apples.

This tendency to "up-grade" or "down-grade" means that the composition of particular grades will vary from year to year. Under such circumstances, the consumer is faced with a product of a given grade that will not be the same product even though the grade is the same one time as compared with another. It has been suggested that preference studies which conclude that consumers are not discriminating as to grades do not necessarily mean that the standards are incorrectly measuring consumer quality preferences. On the contrary, they may indicate that consumers have found the stated grades an unreliable measure of actual product quality and therefore ignore them.

One thing seems clear. Agricultural products cannot hope for the precise standardization that is possible with many industrial products. Nature presents agriculture with a product which varies too widely in quality to secure this kind of standardization.

### *Quality Deterioration*

Much of the production of agriculture is perishable. The fact that a commodity was of a given quality at one point in the marketing channel

[13] R. L. Kohls and N. Oppenheimer, *Quality Recognition and Purchasing Habits of Egg Consumers*, Indiana Bulletin 592, 1953; also R. L. Baker and A. S. Goldman, "Habits, Preferences and Demands of Des Moines Egg Consumers," *Poultry Science*, May, 1951, and E. M. Moore, *Purchasing Practices and Quality Recognition for Eggs*, New York Bulletin 835, 1952.

does not mean that it will be of the same quality when it reaches consumers. Of 1,934 lots of potatoes marked as U.S. No. 1 which were inspected in New York City retail stores, 80 percent did not meet the official grade specifications.[14] Either these potatoes had been incorrectly graded or they had deteriorated since the time of grading. Another illustration of quality deterioration is shown in Table 2, which shows the loss in egg quality in the marketing channels.

TABLE 2. *Change in Number of A-Quality Eggs Between Country Buying Stations and Car-lot Assemblers' Plants, 1948*

| SEASON | A-QUALITY EGGS AT COUNTRY BUYING STATION | A-QUALITY EGGS AT CAR-LOT ASSEMBLER'S PLANT | DECREASE IN A-QUALITY EGGS |
|---|---|---|---|
| | PERCENT | PERCENT | EGGS PER 100 |
| Spring | 72.2 | 62.3 | 9.9 |
| Summer | 68.7 | 58.9 | 9.8 |
| Fall | 80.0 | 74.8 | 5.2 |

SOURCE: North Central Regional Publication 15, *Changes in Egg Quality During Marketing*, Michigan Bulletin 361, 1949, p. 22.

The problem of quality loss during marketing brings up the question of where in the marketing channel should grading be done. If grades are to fulfill their objective of telling producers what consumers consider desirable, grading first must be done when the farmer sells his commodities. Only then will he know what the quality and actual worth of his product was. However, if quality deteriorates during the marketing process, this grade will not remain accurate. Therefore, grading must be done as often as needed throughout the marketing process to assure accurate grade when it reaches the final user.

### *Health Regulations and Quality Standards*

Sometimes there is confusion between the requirements for sanitation and edibility and those for quality. For example, meat entering into interstate commerce must be federally inspected to make sure it is fit for human consumption. The packing plants themselves must also meet certain sanitary requirements. But such inspection has nothing to do with the grading of meat for quality.

On the other hand, sanitary requirements are sometimes written into the grading standards. Milk quality standards are a case in point. Though the grade standards consider bacteria count, they also may prescribe the conditions under which cows must be housed and milked, the milk cooled,

[14] Childress, *op. cit.*, p. 75.

and so forth. Regardless of bacteria count, milk cannot meet the grade requirements unless it has been produced and handled under the designated conditions. Such practices confuse the issue. Often, instead of facilitating marketing processes, such standards turn into practical trade barriers and techniques to control production.

## FARM SELLING ON A GRADED BASIS

Only if the farmer sells on the basis of grades will the fullest benefits of the grading system as a method of consumer-producer communication be realized. Yet it is true that a great many—perhaps a majority—of products are sold by farmers on an ungraded or partially graded basis.

The wider the practice of selling on a graded basis, the less is the possibility for fraud and deceit in the selling of goods by farmers. However, it is probably also true that not all farmers stand to gain from selling on a graded basis. The farmers which produce the higher quality products would gain at the expense of those producing the lower quality products.

Producing high quality products usually is not costless. Usually more careful, and often more expensive, handling is required. In some areas of agricultural production, the extra cost would probably outweigh the extra returns. In these situations, farm selling on a graded basis has little attraction. An example of this is egg production of small poultry flocks. Such flocks produce a large proportion of total egg supply. However, to the individual farmer such production may be a sideline enterprise which receives little attention. In a study of small farm flock owners, it was found that one out of four producers did not know whether a graded market was available. When asked whether they would make the necessary changes to market quality eggs, most of them indicated that they would not.[15]

Generally, the larger specialized producers to whom the product is financially important are more receptive to the idea of graded selling. Also, usually those producers who are farthest from market are more interested in such a program. In that way, the best can go forward and the poorer quality products be sold nearer home. This enhances the competitive position in the distant markets. It also reduces the relative transportation costs, since it generally costs the same amount to ship high quality, high-valued products as it does the lower quality, lower-valued products.

There is evidence that a program of graded selling raises the quality of the goods sold. This usually comes about as the producer realizes the things which he can do which will produce a crop of higher quality. Many of these things represent only changes in present practices and not adoption

[15] H. A. Johnson, L. S. Robertson, and J. W. Sicer, *Small Poultry Flocks in Central Indiana*, Indiana Bulletin 532, 1948.

of new or additional ones. For example, quality deterioration of eggs can be reduced if eggs are held in basements or cool rooms instead of on back porches or in hot kitchens. Picking fruit and vegetables at the proper degree of ripeness may reduce spoilage. Such practices as these might become more widespread if what constituted higher quality and higher valued products were known.

Quality programs should not be built on the premise that only the highest quality is desirable or marketable. As we have seen, there is a wide variety of consumers and users for each commodity. Many of these can pay only for something less than the best. The farmers' objective is to maximize incomes, not quality alone.

## PLACE OF GOVERNMENT IN STANDARDIZATION

One of the prerequisites for an adequate grading system is a uniformity of the standards and terminology to be applied throughout the market area in question. In the United States this area for most commodities is the entire country. Standards which are used in one state but not in others cause confusion. In many cases, such differences may act as effective trade barriers between states or regions.

As has been pointed out, real improvement in correcting this confusion did not come until the federal government entered the picture. The enabling legislation which was passed during the first two decades of this century permitted the United States Department of Agriculture to enter actively into the field of unifying standards of quality.

Federal standards for farm products fall into three classifications—mandatory, permissive, and tentative. Mandatory standards are those whose use is compulsory under certain conditions. Permissive standards are those which are officially recommended but whose use is not compulsory. Tentative standards are those which are offered for use but are still subject to further study before becoming permissive or mandatory. It is mandatory that grains and cotton which move into interstate commerce and also those which are traded on the futures exchanges be graded according to federal standards. Apples and pears sold in the export trade, tobacco, and naval stores also have mandatory standards. A list of the tentative and permissive standards as of early 1952 listed some 136 standards for fresh fruits and vegetables, some 110 for canned, dried, and frozen fruits and vegetables, and some 59 for dairy and poultry products, livestock, meats, and miscellaneous other commodities.[16]

[16] *Check List of USDA Standards for Farm Products*, USDA, Production and Marketing Administration, 1952.

Many states have adopted federal standards and have often made them mandatory under certain circumstances. In some instances, states have promulgated their own standards which differ from the federal standards and from other state standards. Such circumstances cause confusion and often add to marketing costs through encouraging delays, waste, and regrading. Many examples of these grade differences may be cited. Table 3 summarizes the differences in standards as set up for eggs.

TABLE 3. *Summary of Egg Grading Programs in Various States, 1949*

| SITUATION | NUMBER OF STATES |
|---|---|
| Grades and/or standards, compulsory | 23 |
| Grades and/or standards, voluntary | 17 |
| No grades or no legislation | 8 |
| States using part or all of USDA standards | 34 |
| Grade designations are worded same as USDA standards of 1946 | 25 |
| States having own standards | 5 |
| States not specifying standards | 9 |

SOURCE: R. F. Pond and A. W. Otte, *Variation in State Standards and Grades for Eggs*, USDA Mimeograph, 1950.

Standards for milk are also an example of the variation which can exist when various governmental units promulgate individual standards. Cities as well as states are active in establishing milk standards. The ordinances of eighty-four cities of 100,000 or more in population were studied in 1949. It was found that of these eighty-four cities, twenty-three followed the standards suggested by the states in which they were located, twenty had prepared their own local regulations, and forty-one followed the basic pattern of the United States Public Health Service Ordinance. Table 4 illustrates the range of bacterial count which was permitted in the best grade of milk.

These two examples illustrate one of the important functions of the federal government in standardization. Both in the case of eggs and milk, the standards established by federal agencies act as a model for the standards which are established by other governmental units. In this way, the tendency is toward uniformity even though wide differences continue to exist.

Changes in federal standards, or the development of new ones, come about slowly. Generally, the initial suggestions for changes come from the trade or from research findings. Conferences are then held with industry groups to obtain suggestions. Out of the research and suggestions grow tentative grades which are tried out. Finally, after it appears that the stand-

ards meet as many of the criteria for good standards as possible with current knowledge and are usable by the trade, they are issued as the federal standard. This process may extend over a period of several years.

TABLE 4. *Bacterial Standards for the Best Grade of Raw and Pasteurized Milk, 84 Cities, 1949*

| RAW MILK | | PASTEURIZED MILK | |
|---|---|---|---|
| BACTERIAL COUNT PER ML. OF MILK | PERCENT OF CITIES | BACTERIAL COUNT PER ML. OF MILK | PERCENT OF CITIES |
| 10,000 or less | 11.9 | 1,000 or less | 15.5 |
| 20,000–30,000 | 7.1 | 15,000–30,000 | 66.7 |
| 35,000–50,000 | 17.9 | 35,000–50,000 | 11.9 |
| Over 50,000 | 2.4 | Over 50,000 | 1.2 |
| No raw milk permitted or no standard | 60.7 | No standard | 4.7 |
| | 100.0 | | 100.0 |

SOURCE: *Sanitary Milk and Ice Cream Legislation in the United States*, National Research Council of the National Academy of Sciences, Bulletin 121, 1950.

Even some of our more established standards have to be changed with the passing of time in order to keep up with changing conditions. The nomenclature and some of the standards for various livestock grades were changed during the latter part of the decade of 1940. An official of one of the large milling concerns recently stated that grade standards for grains need to be carefully re-evaluated in relation to their use or intrinsic value. He suggested that research in this area would undoubtedly reveal that at least in some instances existing grade standards have very little relationship to their use value.[17] The changing of standards, however, is often a difficult and time-consuming process. Many persons have a vested interest in maintaining the existing standard. Still others think always of the existing standard as being right because it exists.

## THE CONSUMER AND GRADING

Generally speaking, consumers' goods are not sold on the basis of uniform standards and grade terminology. One of the problems in the complex society of today is that the consumer knows relatively little about the quality of the goods among which choice has to be made. In many instances, the consumer is forced to rely upon the brand and the manufacturer's reputation of quality.

[17] From the remarks of C. C. Farrington, Vice President, Archer-Daniels-Midland Grain Company, before the National Marketing Research Workshop, 1949.

In purchasing foods, the consumer is faced with a confusing range of brands and quality terminology. The terms designating top quality vary widely. Such terms as "extra fancy," "prime," "choice," "AAA," "AA," or just plain "A" may all be used to designate top quality. "Good" may be the terminology of the lowest quality available. In canned goods, companies use different brand names to designate the different qualities. There is little to guide the shopper who is not familiar with the brands themselves. In one city, it was found that only two out of five housewives knew the term which designated top quality eggs.[18] In a marketing system which is theoretically based largely upon consumer direction, the average consumer is faced with the problem of how to make her wants known.

Informative labeling and simple "A-B-C" designations have been offered as ways of aiding the consumer in making rational selections. In the "informative label," the product is described in terms which will help the consumer in making the proper choice for the use she has in mind. For example, informative labeling on fruits and vegetables would describe the product as "wholes," "halves," "purée," and so on. It would also give other details concerning its proper cooking uses and the number of servings possible.

The "A-B-C" labels have the benefit of simplicity. But they will be useful only if the attributes of each grade are known by the purchaser. The opponents of this proposal point out that "C" quality products may be the best product for some uses. But the average consumer will not know this and will discriminate against the lower grades as products not useful for consumption. For example, both "A" and "B" eggs are adequate for table use. The "C" grade eggs may actually be better for some cooking uses, such as when whipped egg whites are wanted. All are nutritious and clean products. But it is maintained that the terms "B" and "C" discriminate against their use because of the consumer's association of these terms with unusable products.

Improvement in the area of consumer grading will be slow. There is widespread acknowledgment that the average consumer needs help. There is not much agreement as to how this help should be given. Large concerns who have built up preferences for their brands are very reluctant to sanction a uniform labeling system. Much of the modern manufacturing emphasis upon brands and advertising is premised upon the fact that the consumer is faced with a bewildering selection of goods and can be influenced into simple brand dependence. This does not necessarily mean that inferior products can dominate the market. Even brand shopping cannot prevent consumers from turning away from unsatisfactory products. But it does

[18] Kohls and Oppenheimer, *op. cit.*

mean that new products and new concerns may have difficulty in securing consumer acceptance even if their product is of good quality.

## THE WHOLESALE TRADE AND GRADING

It is in the wholesale trade that uniform standards for grading find widest acceptance. Here the purchase by sample or by grade description is relatively common. Among wholesalers and processors, it is widely acknowledged that without some standard language, confusion and fraud would reign to the detriment of all.

In the development of standards, much dependence is placed upon the help and cooperation of the wholesale trade. In some instances, the grade has been developed with only the wholesale trade in mind. This may help explain why grades in use often are not meaningful either to farmers or to consumers.

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CHAPTER ELEVEN

# *Collection and Use of Market Information*

A smooth, efficiently operating marketing system depends to no small extent upon accurate, adequate, and timely information. Everyone who buys and sells goods or is otherwise connected with marketing is, to some extent, either consciously or unconsciously collecting and evaluating information pertinent to his particular marketing activity. In addition, many agencies specialize in the function of collection, interpretation, and dissemination of all kinds of marketing data. It is to these problems of information collection and use that we now turn our attention.

## THE ROLE OF MARKET INFORMATION

Buying and selling is the heart of marketing. The establishment of prices at which products will change hands is the end product of the buying and selling functions as goods move through the marketing channel. In an economy such as ours, much of the direction of the production and marketing activities is left to these prices.

The central position of the place of competition in the pricing process has already been discussed. It will be remembered that the concept of perfect competition assumes several conditions. One of these assumed conditions is that the various individuals and agencies in the economy have perfect information, and that the buyers and sellers are equally well informed. We concluded that, though perfect competition is probably nonexistent, competition is still an effective force. Such effective competition depends to no small extent upon buyers and sellers who base their actions upon pertinent knowledge.

Marketing consists of the activities involved in the getting of the right products to the right place at the right time. The questions of what, when, and where are continually begging for answers. Adequate and accurate information about the supply-and-demand conditions of the market is necessary if the products are to be moved into consumption with the minimum of waste, confusion, and cost.

Besides the decisions concerning the marketing of the product already on hand, long-run future plans must be made. Here again information concerning future market potentials is necessary if wise production plans are to be made. Not only are farmers in need of this type of market information, but also processors and other agencies of the marketing system are continually faced with decisions as to the proper outlet, the proper package, and other pertinent questions. At least part of so-called surplus problems and the failure of businesses can be attributed to too little information too late or incorrect evaluation of available information. Good decisions are informed decisions. This function of the marketing process can be characterized as that which helps the gears of the marketing machinery mesh with a minimum of lost motion and friction.

## SECURING ADEQUATE MARKET INFORMATION

### *Area to Be Covered*

In a country such as ours where hundreds of different agricultural products are produced and which must be handled by many people and distributed over large areas, the question of what kind of information is needed is a complex one. Information on current market prices is necessary. So is information concerning quantities now available in storage, en route, and in prospect. Demand facts need to be collected. Information is needed at all levels in the marketing channel from the point of first sale from the farm, through the various points in the wholesale and processing stages, to the retail level when the goods are sold to the consumer.

Each kind of information presents problems in collection. Generally, a more detailed informational coverage is available for the wholesale level than for either the farm or retail level. More complete information is also available for those products which utilize organized central markets than for those moving through more decentralized and unorganized channels.

### *Price Information*

Accurate and meaningful price information is very difficult to obtain. Price has meaning only in reference to the product itself. The great differences in quality and trade practices complicate the picture. The ac-

curacy and meaningfulness of price information depend to a large extent upon uniformly accepted and applied quality standards.

For example, let us look at cattle prices. The United States' average monthly price which farmers receive for cattle is reported. Just what does this price refer to? Certainly it is for something different at various seasons of the year. During the fall months, a larger portion of the cattle would be of lower quality coming off pastures and ranges. During the late spring and early summer a larger portion of cattle would be those higher of quality coming out of feed lots. The reported price of "choice" cattle means something more. Within the limits of the variation in the application of grading standards, it refers to a rather specific quality of cattle. The reported price of "choice, 900–1100 pound cattle at Chicago" is still more specific and meaningful. Such a quotation now has meaning to the farmer trying to estimate the value of cattle in his feed lot. It has meaning to the dealer trying to follow the prices on several markets. This same type of example could be developed for almost any commodity. Only when the market information on prices, receipts, or consumption is specific can it be widely used.

Let us look at still another complicating factor in price reporting. In many instances the publicly quoted figure is not the actual price at which commodities are being bought and sold. Premiums or discounts may be used as a device to raise or lower prices without changing the quoted price of sale. The pricing of butter at Iowa creameries is a good example of this practice (Table 1). To one studying butter prices, the quoted prices would not have shown the true butter price picture at Iowa creameries. The accurate price information would have to take into account the premiums and discounts being used. Even the grade of butter was not closely related to the premium and discount system. Such a system of premiums and discounts along with other trade differences would make it very difficult for one creamery to compare its prices with another.

The use of various bases for weights and pricing points is still another example of the inaccuracy of the quoted price as an indicator of the actual price at which commodities change hands. An example of such a situation is in the marketing of broilers. The average margin during 1950 between the farm prices received in one Indiana county and Chicago quoted prices was 2.5 cents. The margin between the same farm prices and Detroit was 3.9 cents. The county was about equidistant between Chicago and Detroit. However, the buyers in Chicago usually paid on the basis of market weight plus 5 percent while the buyers in Detroit paid on the basis of market weight. In other words, country buyers selling to Detroit had to assume all the shrink loss in transit while those selling to Chicago did not, since they

received a 5 percent weight bonus at Chicago. In this case, quoted prices for the Chicago market and for the Detroit market were not directly comparable as in reality they did not represent the same product.[1]

TABLE 1. *Price Premiums or Discounts Based on the 92 Score Quotation, 70 Iowa Creameries, September 1, 1948*

| SIZE OF PREMIUM OR DISCOUNT (CENTS PER POUND) | SCORE OF BUTTER SOLD | | | | TOTAL CREAMERIES |
|---|---|---|---|---|---|
| | 89–90 | 90–91 | 91–92 | 92 AND HIGHER | |
| Discount * | 2 | 1 | 0 | 0 | 3 |
| Premium: | | | | | |
| ¼ | 1 | 1 | 1 | 0 | 3 |
| ½ | 2 | 0 | 9 | 1 | 12 |
| ¾ | 0 | 0 | 2 | 0 | 2 |
| 1 | 0 | 1 | 5 | 1 | 7 |
| 1¼ | 0 | 0 | 0 | 1 | 1 |
| 1½ | 0 | 0 | 1 | 9 | 10 |
| Varying with grade | 0 | 0 | 4 | 4 | 8 |
| No premium or discount | 11 | 6 | 6 | 1 | 24 |
| Total | 16 | 9 | 28 | 17 | 70 |

* These three creameries sold butter f.o.b. factory; all others paid shipping costs to market.

SOURCE: A. G. Mathis and D. E. Hirsch, *Butter Pricing by Iowa Creameries*, Farm Credit Administration, USDA Circular C-136, 1950, p. 20.

The difficulty of reporting prices on a comparable basis is probably best illustrated at the retail level. Some stores operate on a cash-and-carry basis. Others offer credit or delivery services, or both. The simple comparison of prices between these different types of stores is not enough. In some instances the price represents only the product itself while in other instances it represents the product plus a bundle of marketing services. All of these examples represent the difficulty of collecting price information. And, probably more important, they illustrate the necessity for judgment and care in using such information.

### *Information Dissemination*

If information is to be useful it must be timely. What is considered timeliness will vary with the different types of markets and different ways in which information is used. Information which is to be used on the exchanges of the country is needed almost every minute during the trading day. The livestock markets need information for each day's activities. Country markets for fruits and vegetables need rapid and detailed information

[1] R. L. Kohls and T. C. Walz, *Broiler Trucker-Buyers in Indiana*, Indiana Bulletin 580, 1952.

during the production season, but very little during the remainder of the year. Reports on the retail trade may be issued weekly or even less often and still be quite useful, since the retail price structure is slow to change.

Much useful information is not tied to the day-to-day workings of the market and short-run price determination. Total production figures, reports of products in storage, utilization patterns, and so on are useful longer-run marketing information. The usefulness of much of the marketing data depends not so much upon speed in dissemination as upon accuracy and completeness. Probably as many important decisions hinge upon the analysis of historical data as upon the receipt of immediate short-run information.

## COLLECTION AND DISSEMINATION AGENCIES

### *Private Agencies*

Much information is collected either formally or informally by businesses for their own use. Large food processors maintain large staffs to collect and evaluate information usable to the company in the production and marketing of its products. Much of this information, however, is not available for others to use. In a sense, large companies obtain still stronger bargaining positions because of their superior information facilities.

To offset this situation, trade organizations of different industries compile market information for general use by their trade. Organizations like the American Meat Institute, the National Grocery Manufacturers of America, and the various trade organs of the wholesale and retail trade all continually compile pertinent information. Much of this data is available to those who wish to use it.

Some newspapers operate primarily as market information agencies. General newspapers and radios also retain the services of farm editors, financial editors, and others whose job it is to keep their public informed. To this must be added the growing group of private research agencies which perform specialized jobs for a fee. They may evaluate the market potential for a new product, study how an old product may secure an expanding market, or do any of a wide variety of informational tasks upon request. Though much of the remainder of this chapter will discuss the activities of governmental agencies, the importance of the private information services must not be minimized.

### *Public Agencies*

In the field of agricultural information, public agencies play a major role in the collection of information. To a considerable extent, this job has

been done by federal governmental agencies, though often in cooperation with various state agencies. There is much to be said in favor of the public collection and dissemination of pertinent marketing information. As we have pointed out, the principal need is to provide accurate, unbiased information to all interested parties of the market place on an equal basis. Only in this manner can the bargaining power of both buyers and sellers, from the the standpoint of market information, be equalized. Private concerns spend their own resources in collecting information to enhance their individual competitive position. One should not expect them to freely offer their competitors the same service. The justification of the use of federal funds for agricultural market news and statistics is much the same as that for research. The numerous small units of the agricultural plant are not in a position to undertake these services for themselves. And without these services, they and their representatives may be at serious disadvantage in the market place.

Most of the informational services of particular interest to agriculture are centered in the Departments of Agriculture, Labor, and Commerce. The Departments of Labor and Commerce collect and disseminate much of the information which is important in appraising the economic condition of the economy as a whole. Insomuch as the well-being of agriculture depends upon the well-being of the whole economy this information is widely used in appraising the agricultural situation.

*The Department of Labor* releases most of the information through its Bureau of Labor Statistics (BLS). Statistics on employment and wages and various general prices are collected by this bureau. The indexes of retail and consumer's prices, wholesale prices, and daily primary market prices are some of the more important price series obtainable from this source.

*The Department of Commerce* releases most of its economic information pertinent to agriculture and agricultural industries through its Bureau of Foreign and Domestic Commerce. This bureau is responsible for the collection of national income and production data. It issues indexes of industrial production, business sales and inventories, construction activities, and personal incomes. All of these data are pertinent in evaluating the general demand picture. The best single source of these data collected by both the Departments of Labor and Commerce is the monthly publication, *Survey of Current Business*, which is published by the Department of Commerce.

Another important bureau in the Department of Commerce is the Bureau of the Census. The general census and the Census of Manufactures and Trade, which are taken every ten years, and the Census of Agriculture, which is taken every five years, are all published by this agency. These

censuses furnish the basic data and bench marks for much of the statistical work done in the United States.

*The Department of Agriculture* is the source of the vast majority of market and economic information pertinent to agricultural producers and the food industry in general. Much of this information work is centered in the Agricultural Marketing Service (AMS), one of the major subdivisions of the department.[2]

The purpose of the Federal Market News Service operating within the Agricultural Marketing Service is to collect and distribute information on prices, supply, and demand conditions which exist at the various marketing points throughout the country.[3] The service was established in 1913 by an appropriation to aid in information collection. The first market report issued was that covering the movement and prices of strawberries at Hammond, Louisiana, in 1915. From this, the service has developed into its current six branches for cotton, dairy and poultry, fruit and vegetables, grain, livestock, and tobacco. In many instances the federal agencies have entered into cooperative agreements with the individual states in order to expand the coverage of the service.

Market news reporters stationed at the various important markets and production areas of the country collect much of the data for the market news reports. These men are specialists in their individual fields. The market information must be collected from the various individuals and agencies actively marketing the product. The information which agencies give might be incorrect or biased. The news reporter must be thoroughly acquainted with the market and the product so as to appraise the accuracy of the information obtained. For example, a livestock news reporter must be able to grade livestock and be thoroughly acquainted with the method of the livestock trade. The same is true for the news reporter for each of the other commodities.

The various offices are tied together by leased wire and telephone services as shown in Figure 1. With this communication system, information can be exchanged almost instantaneously with all other points in the country. Messages placed on the wire at any one point reach all other points on the circuit and, when desired, can be relayed to offices on other circuits.

Speed is of major importance in making such market information

[2] Prior to the reorganization of the department in November, 1953, the market news work was centered in the Production and Marketing Administration (PMA) and the estimating work in the Bureau of Agricultural Economics (BAE). Most of the activities of these two organizations were collected in the AMS, and the PMA and BAE as such were abolished.

[3] Much of the following concerning the operation of the Market News Service has been taken from *Agricultural Estimating and Reporting Services,* USDA Misc. Publication 703.

useful to the trade. Agencies or individuals can subscribe to the Commercial News Dispatch Service of the Western Union Telegraph Company which obtains information directly from the Market News Service. Radio is widely used in distributing the market reports. Nearly 1,100 radio stations throughout the country regularly broadcast market news information. The information is also made available to the press services of the country. Most of the daily newspapers carry market news either completely or in part as collected by the federal and state agencies.

Daily, weekly, and monthly mimeograph reports and summaries are available free of charge from the markets covered by the service. Such reports arrive by mail and are usually too late to be of use in evaluating immediate market conditions, but they are useful in evaluating the trends which are developing. The following illustrates the type and extent of the information available from the various offices of the Market News Service:

Cotton:

1. Prices on lint cotton, cotton linters, and cottonseed.
2. Daily price quotations on ten principal markets.
3. Quality data during the ginning season.

Dairy and Poultry:

1. Prices, receipts, dealer's stocks, cold storage holdings, and retail movements are reported for butter, cheese, fluid milk, cream, dried milk and products, condensed and evaporated milk, shell, frozen, and dried eggs, live and dressed poultry.

Fruits and Vegetables:

1. Prices and supply movements for the large city markets.
2. Shipping area data on prices, volume of loadings, quality, and market trends.
3. Cold storage holdings in principal centers.

Grain:

1. Daily grain prices and supply movements (both cash and futures) for the principal markets.
2. Prices, market movements, and production data of feedstuffs.
3. Country shipping point prices of hay, beans, hops, and some others.

Livestock:

1. Prices and supply movements on the principal livestock markets.
2. Wholesale meat prices and information on large consuming centers.
3. Feeder livestock prices and supplies.
4. Cold storage holdings.

Tobacco:

1. Prices and supply movements on important auction markets.
2. Prices, supplies, and related data for the growing area.

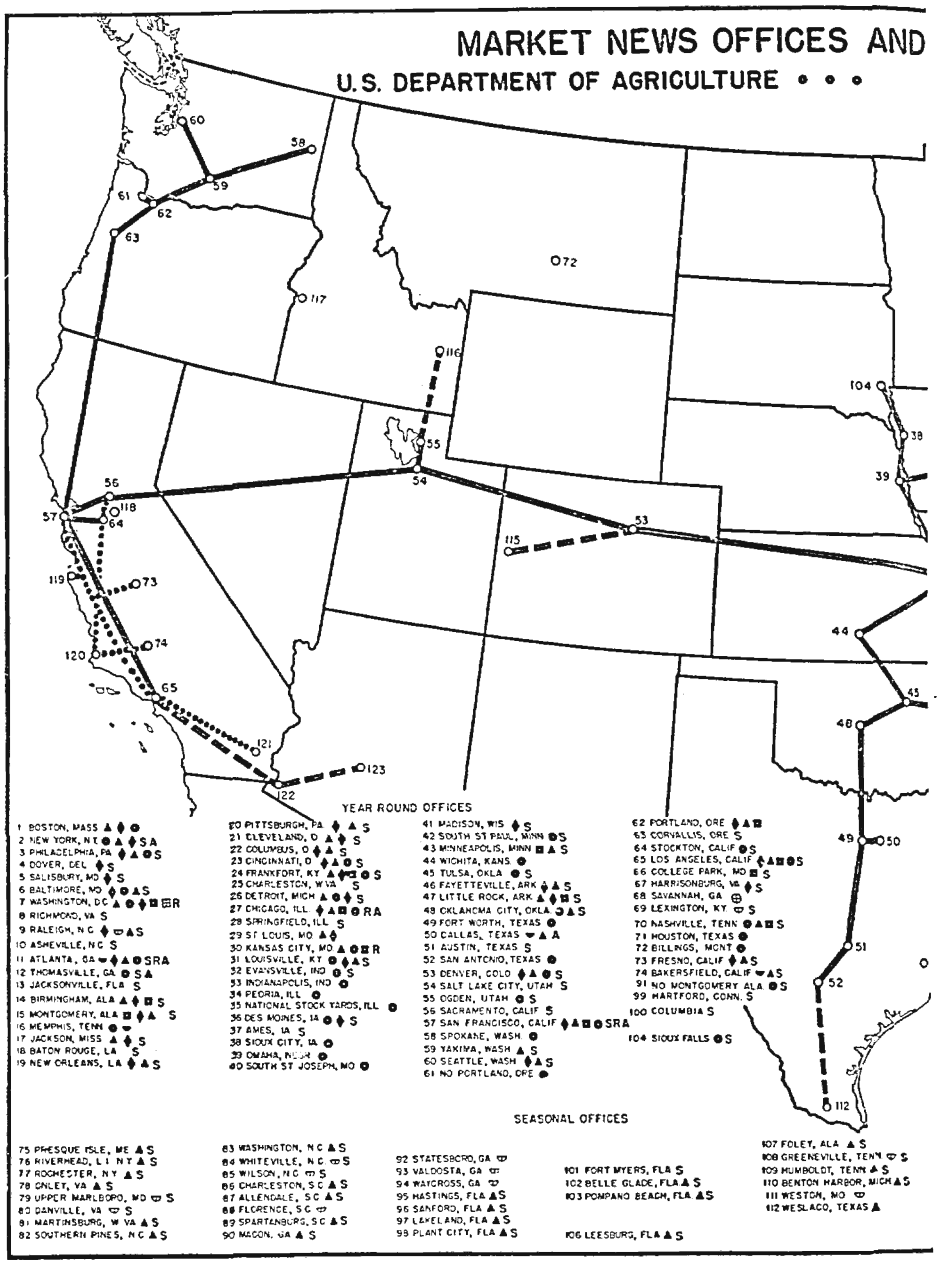
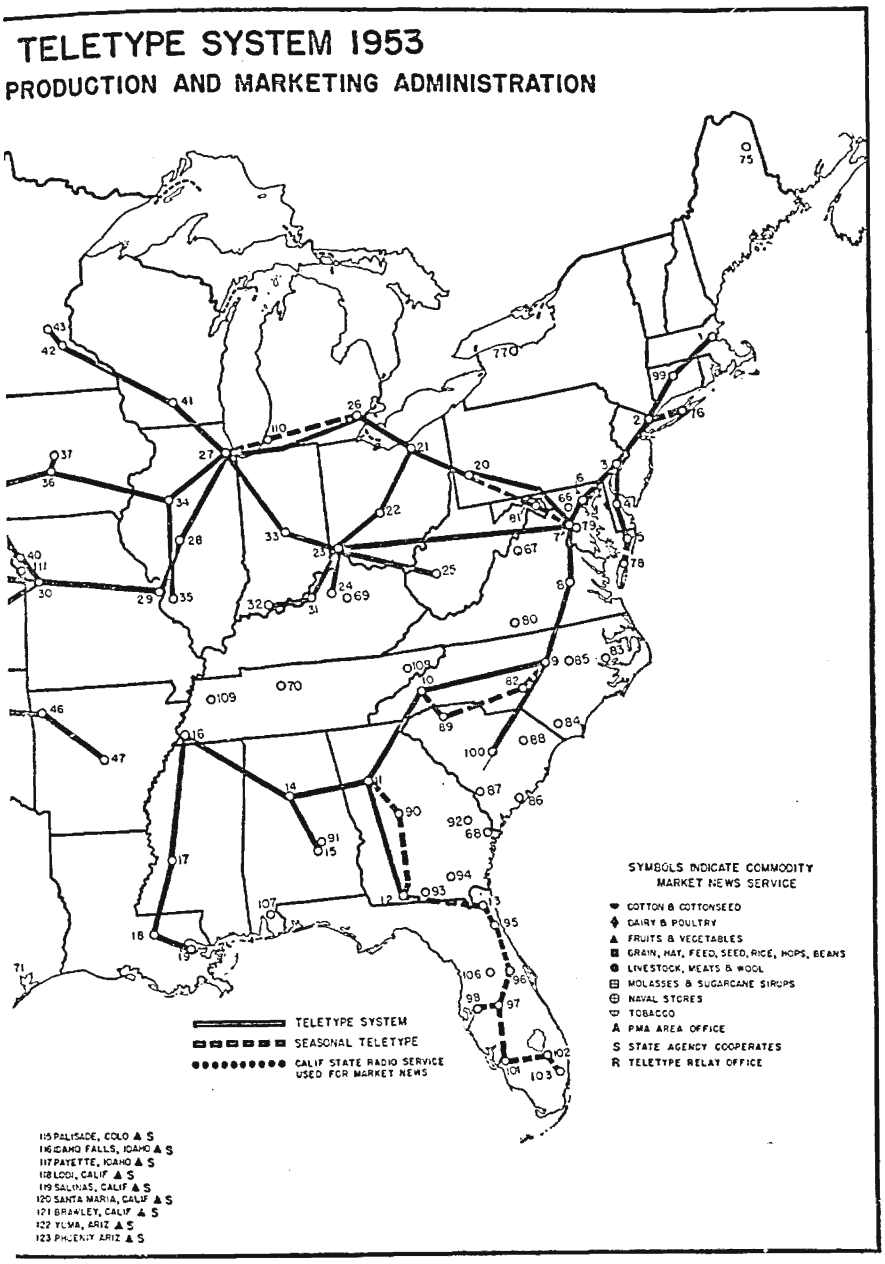



FIGURE 1. *The market news system of the*


TELETYPE SYSTEM 1953
PRODUCTION AND MARKETING ADMINISTRATION
SYMBOLS INDICATE COMMODITY MARKET NEWS SERVICE
COTTON & COTTONSEED
DAIRY & POULTRY
FRUITS & VEGETABLES
GRAIN, HAY, FEED, SEED, RICE, HOPS, BEANS
LIVESTOCK, MEATS & WOOL
MOLASSES & SUGARCANE SIRUPS
NAVAL STORES
TOBACCO
A PMA AREA OFFICE
S STATE AGENCY COOPERATES
R TELETYPE RELAY OFFICE
TELETYPE SYSTEM
SEASONAL TELETYPE
CALIF STATE RADIO SERVICE USED FOR MARKET NEWS
115 PALISADE, COLO ▲ S
116 IDAHO FALLS, IDAHO ▲ S
117 PAYETTE, IDAHO ▲ S
118 LODI, CALIF ▲ S
119 SALINAS, CALIF ▲ S
120 SANTA MARIA, CALIF ▲ S
121 BRAWLEY, CALIF ▲ S
122 YUMA, ARIZ ▲ S
123 PHOENIX ARIZ ▲ S

*United States Department of Agriculture. (Courtesy USDA.)*

The *Agricultural Estimates Division* of the AMS is primarily responsible for securing much of the basic statistical information pertinent to agriculture. In addition to the federal personnel there are forty-one state offices aiding in this work. Most of the information is collected from cooperating reporters throughout the country. These reporters are farmers and businessmen who complete and return questionnaires from which professional statisticians develop the estimates. These cooperating reporters receive no pay except the satisfaction of knowing they are doing very valuable work.

The procedures followed in securing, preparing, and releasing data are fairly standard throughout all of the state offices. The questionnaire which has been designed to secure the needed information is sent out from the various states to their list of cooperating reporters. When these are returned to the state offices, they are checked, edited, and tabulated by counties and by groups of counties known as crop reporting districts. The state statistician may even do some spot checking in the field to verify the information. The final forms are then sent by special delivery to the Crop Reporting Board in Washington, D. C. Here the opening, tabulation, and releasing of the compiled data are done with the greatest of care to prevent information leaks in advance. The following description of the final stages of this procedure will illustrate the great care used:

> On the morning of the release of a report, the chairman of the board, the secretary of the board (who has the key for one lock), one other board member, and a representative of the Secretary of Agriculture (who has the key for the other lock), go to the locked room accompanied by an armed guard. There they unlock the mail box and take the state reports to another room. The night before the venetian blinds on all windows within this corridor have been lowered, closed, and sealed. No one may open or even adjust these blinds while the board is in session. All telephones in the wing have been disconnected, the door at the other end of the corridor is locked, and a guard is on duty outside. These are called the lock-up quarters.
>
> When forecasts or estimates have been adopted for all states for a given crop they are handed to the computing unit. The tables and stencils are prepared. Mimeograph machines are brought into the quarters the night before so that the report can be processed inside the locked corridor.
>
> After approval by the Secretary of Agriculture, two or three minutes before the release time the chairman and secretary of the board leave the lock-up quarters and proceed under guard to the release room, looking neither to right or left and speaking to no one nor acknowledging any greeting, according to regulations. In the release room telephone and telegraph instruments are already connected and the operators are assembled in a prescribed space out of reach of the instruments.
>
> The chairman places one report face down beside each telephone and telegraph instrument. At the precise time, a representative of the Secretary of Agri-

culture says "go" and the various reporters rush to their instruments and begin sending out the reports.

Also at this time the information is sent to the various state offices for their release.[4]

This elaborate procedure is testimony to the usefulness of the various data. Estimates of the size of crops and other important information are immediately used in the buying and selling of products. An early information leak might be used by an individual for his personal advantage. To illustrate, suppose the last estimate of the wheat crop had been for a crop of 900 million bushels. The new estimate to be released, however, will reduce the production to 825 million bushels. Such a predicted reduction in the crop would no doubt at least temporarily strengthen prices. Someone with advance knowledge could have purchased wheat and profited by the short-run fluctuation.

The information available covers a wide range of products. The present program for statistics and reports prepared by the Agricultural Estimates Branch and available free upon request include the following:

Livestock:

1. January 1 numbers, value per head, and total value, by states, of livestock on farms and ranches; published every February.
2. January 1 cattle, sheep, and lambs on feed; published in January. Reports on development of feeding situation are issued in October, November, and December.
3. Sow farrowings and pigs saved in the spring and fall season along with sow breeding intentions; released in June and December.
4. Report on the early lamb crop issued in March and on total lamb crop in July; lamb crop development reports are also released in April and May.
5. Estimates of wool and mohair production; issued in March.
6. Condition of western range feeder cattle and sheep; reported monthly.
7. Shipments of stocker and feeder cattle and sheep into eight leading feeding states; reported monthly. Shipments of lambs from western feed lots; reported weekly from January through May.
8. Meat animal farm production, disposition, and cash receipt estimates by states; issued every April.
9. Livestock slaughter and meat production estimates; published monthly.

Dairy:

1. Number of milk cows on farms; released January 1 and monthly.
2. Milk production per cow; released monthly.
3. Annual production of milk and butterfat on farms.
4. Annual farm disposition of and income from milk.
5. Rations fed to milk cows; published monthly.

[4] *Op. cit.*, pp. 12–14.

6. Production estimates of butter, American cheese, ice cream, evaporated, condensed, and dry milk, dry casein and milk sugar; released monthly, some weekly.
7. Manufacturers' prices, stocks and sales of condensed and dry milk products; prices paid by dairy plants for milk for manufacturing purposes; distributors' buying prices for milk used for fluid consumption; retail sales prices for fluid milk; published monthly.

Poultry:

1. Number and value of chickens and turkeys on farms January 1.
2. Layers on farms, rate of lay, egg production, young chickens, and potential layers; reported monthly.
3. Chicks hatched, eggs in incubators, and orders booked by hatcheries for future delivery; published monthly.
4. Farmer's intentions to buy chicks and the estimate of number of chickens raised; released in February and July respectively.
5. Grower's intentions to buy turkeys and estimate of number of turkeys raised; released in January and August respectively.
6. Chick placements in commercial broiler areas; released weekly.
7. Production of liquid, frozen, and dried eggs and canned poultry; released monthly.
8. Annual farm production and disposition of chickens and cash receipts from chickens and eggs; released in April.

Crops (grains, cotton, tobacco, fruits and vegetables, and others):

1. Intended acreage, planted acreage, and harvested acreage reports are issued for most crops. For most spring sown crops, intentions are released in March; acreage planted in July and acreage harvested in December. (Publication of cotton intentions and prospects before July is prohibited by law.)
2. Crop condition and estimates of yields and production of many crops; published throughout the growing season. Final production data are released at the end of the season.
3. Disposition (used for seed, fed, sold, available for sale) and value reports for principal crops; issued in May.
4. Estimates of stocks and their position (on farms and in off-farm storage) of many crops; released quarterly.
5. Sales of grains and oilseeds; reported monthly.

In addition to the collection of the wide range of basic statistical information, the Agricultural Marketing Service also interprets the current and future meaning of the data. Such interpretations are widely known as outlook reports. In addition to the federal outlook work, the extension services of many states also prepare outlook publications which are aimed to service their farmers and market people. As our economy has grown more and more complex, looking into the economic future has become more and more important.

Many publications issued by the Agricultural Marketing Service inter-

pret and appraise current market information and make predictions concerning future trends. These publications often report research findings of special interest. Some of the more important of these reports, in most instances available free, are as follows:

*The Agricultural Situation.* A popular type of monthly publication which contains brief reviews of current economic developments affecting farmers. Short articles also report new findings and conditions of special interest.

*The Demand and Price Situation.* This monthly publication reports the more technical details, analyzing the demand and price prospects for agriculture. There are brief outlook reviews for each of the major commodity groups. This is probably the best publication for those who wish to keep abreast of the general trends of the markets. *The Agricultural Outlook Digest* is a single page summary of the general and specific commodity situations. It also is issued monthly.

*The Marketing and Transportation Situation.* This monthly publication contains statistical tables showing price spreads between the farmer and the consumer. It also includes summary reports of some of the latest developments in the field of agricultural marketing. The publication, *Marketing Activities,* also is issued monthly. This also reports results of marketing research and current developments in the field of standardization, grading, and price support activities.

*Commodity Situation Reports* (the cotton, dairy, fats and oils, feed, fruit, livestock and meat, poultry and egg, tobacco, vegetable, wheat, wool, world sugar, national food, and farm cost situations). Some of these are issued monthly; others periodically. Each appraises the current market situation and future prospects for the respective commodity. Articles of special interest in the particular commodity groups are also carried. In all of the *Situation* reports, one issue in the fall, usually October, is devoted to the analysis of the outlook for the next year.

The above illustrates the scope and type of information available. In spite of the availability of such information, many producers and marketing agencies are notoriously uninformed. Ignorance is not a passive situation. Information is a strong competitive weapon. To assemble and properly evaluate pertinent information is one of the most difficult jobs facing marketing personnel. In this work even the most astute make costly mistakes. However, to remain voluntarily uninformed when so much information is available is the most costly mistake of all.

## INFORMATION NEEDS AND PROBLEMS

Many of the needs and problems which are involved in keeping a complex marketing organization informed have already been touched upon. These now can be brought together in four major areas, namely (1) extension of coverage, (2) keeping abreast of changing conditions, (3) methodology of collection, and (4) dissemination problems.

*Extension of Coverage*

More specific information is needed. With the wide range of qualities that are involved, price, supply, and demand information will have its maximum use only if it is related to specific grades and conditions. Since many agricultural products have several uses, information needs to be specific as to use. For example, price quotations for the fruit which is to be used fresh cannot be interchanged with those quotations for the fruit which is to be used for processing. Feeder livestock conditions need to be reported separately from slaughter livestock market conditions. Information needs to be more detailed and specific as to the level of the marketing channel being reported, such as f.o.b. prices at the country elevators, prices in the terminal market, and retail prices.

There is a need for additional regional or local data. Much of the information is collected on a state or national basis. Political subdivisions, however, do not necessarily correspond with the areas which are economically homogeneous. For example, local and regional data of the broiler chick placement statistics are gathered and reported for our major broiler areas. Some of these areas, such as the Del-Mar-Va peninsula, northern Georgia, and northwestern Arkansas, represent highly specialized regions for which state-wide data would not be adequate.

There is a need to fill the large gaps in which no information is now available. One of these blank areas is that of the retail trade. Information which would permit consumers to compare prices and products more rationally should enhance competition at this level of the marketing system. There are many commodities about which very little information is available. Such commodities are often considered "minor" when viewed from the national viewpoint. However, to the specialized producers, information for such products is of major importance. Naval stores and blackstrap molasses are examples of this type of product. Gum turpentine and rosin are distilled from crude pine gum which is produced by over 8,000 farmers. Nearly three-fourths of the total production is in Georgia. As an industry it has an annual gross value of many millions of dollars. To the Georgia producers it is a product of major importance. Yet there is nothing available from the federal services in the way of market information.[5]

*Keeping Abreast of Changing Conditions*

In a dynamic economy, the methods and channels of marketing are continually changing. Such a situation means that news and information

[5] *Program for Development of the Market News Service*, Production and Marketing Administration, USDA Mimeograph, 1950.

services which once were adequate may not meet the requirements of a new situation.

One of the important causes of information problems is the decentralization of the marketing processes which has taken place for many products. The large central wholesale markets which once handled the bulk of the products now may be largely by-passed. The principal level of initial transactions is now in the production area, and the transactions at large wholesale terminals may no longer be a representative picture. The growth of direct marketing of livestock means that other coverage than that of the terminal market must be devised if the information is to be representative of the livestock being marketed. The informational services for butter were set up to cover the large central exchanges which originally handled the great majority of the butter transactions. However, during 1949 it was estimated that the butter sold on the Chicago Exchange represented only 1.7 percent of all the butter received in Chicago and less than two-tenths of 1 percent of all the butter produced in the United States.[6] Examples of similar situations could be drawn from many other commodities.

Changes in the transportation pattern also require changes in the informational organization. At one time rail movement data adequately represented the supply movements of agricultural products. This is no longer true. In many of our livestock markets, the vast majority of the supplies are received by truck. It has been estimated that nearly two-fifths of our fresh fruits and vegetables is shipped to market by truck. Some time in the future, the volume of airline freight may need to be considered in estimating market movement.

There have been marked changes in the amount and type of processing of agricultural products during the past several years. The processing industry for fruits and vegetables was at one time a minor outlet. Now this industry is a major outlet. Too, only in the past few years have the products utilized in the frozen food industry reached sizable proportions. Informational services must be continually revised to reflect changing conditions such as these.

### *Methodology of Collection*

Above we have pointed up the need for more informational services. However, there is also a need for more accurate coverage. Questions of accuracy arise with regularity. Some are sure the estimates for the pig crop, the corn crop, or the cotton crop are too high or too low. Many times the estimates prove to be correct, but in a few cases they have been decidedly

[6] Hugh L. Cook, "Central Market Quotations and Country Buying," *Journal of Farm Economics*, November, 1950, Part 2.

wrong. Such mistakes bring a deluge of protests—sometimes even from Congress itself. Such interest is testimony for the importance of accurate information.

However, the financial resources, both private and public, which can be devoted to this marketing function are limited. This focuses attention on increasing the coverage and usability of the market and economic information and decreasing the costs. New methods of securing adequate information are continually being sought. Complete coverage of all transactions is impossible. The problem is one of adequate sampling so that the information reported will be representative.

In the area of methodology also falls the problem of how to deal with the growing importance of nonprice competition. We have seen that the quoted prices may be merely the basis for determination of premiums and discounts. Credit conditions, transportation costs, various types of allowances—all these may be determining factors which are not reflected in quoted prices. Determining what the trade practices are and how they can be handled presents a continuing problem to students of the techniques of information gathering. The mere spending of large sums of money to collect information is not the whole answer. The real challenge is to devise new methods so that more information of greater accuracy can be obtained with less expense.

*Dissemination of Information*

As pointed out in the discussion of usable information, timeliness is of great importance. With the development of modern communications, the demand for speed has increased. The mail and press were aided by the telephone and telegraph. To these methods were added radio and more recently television. With each new method of communication, the emphasis on speed has increased. Also, the area over which the information is used has broadened.

Much of the information of a more basic character does not require such speedy dissemination. In this area, the mails remain the most important method of dissemination. Even here, however, there is a need for more uniform terminology in describing marketing conditions as the area of use grows larger. Market reporters no longer can use their own peculiar teminology in explaining marketing conditions. The preparation of press and radio releases in language which cannot be misunderstood is important. In this important field, many of our informational agencies need much more experience.

An educational program for the users of the information is also needed. Only in this way will data be used for the purpose for which they were

intended and nothing more. The use of price ranges instead of single specific prices is an example of the misunderstanding and misuse of information. In many markets, because of the number and variation of the transactions, the reporting of a specific meaningful price is not possible. Only a price range represents the true picture. However, some of the users of the information desire a single quotation and criticize the use of price ranges. This demonstrates misunderstanding of the mechanics of the marketing and price making process. All considered, the securing of adequate dissemination and wise use of information present problems no less difficult than those involved in collection.

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CHAPTER TWELVE

# Transportation

Products must be moved from where they are produced into the areas where they will be consumed. As we have seen from our study of the relationship of production and consumption areas of agricultural products, this is no simple task. Adequate and efficient transportation is a cornerstone of our modern marketing system. The wide variety of food available in our grocery stores at all times of the year would not be possible without modern transportation. How this moving job is done and some of its major problems are discussed in the pages that follow.

## WHO DOES THE JOB?

Transportation charges over the years have accounted for about 12 percent of the total marketing costs for food products. In 1949, it was estimated that the total transportation bill of the nation was 13.9 billion dollars. Agricultural products accounted for nearly one-fourth of this total

TABLE 1. *Estimated Costs of Transportation, 1949*

| TYPE OF CARRIER | AGRICULTURE AND RELATED PRODUCTS | NONAGRICULTURAL PRODUCTS | TOTAL |
|---|---|---|---|
| | BILLION DOLLARS | BILLION DOLLARS | BILLION DOLLARS |
| Railroads | 1.9 | 5.7 | 7.6 |
| Motor truck | 1.7 | 3.8 | 5.5 |
| Other * | † | .8 | .8 |
| Total | 3.6 | 10.3 | 13.9 |

* Water carriers, air carriers.

† Less than .05 billion dollars.

SOURCE: Donald E. Church, *Effect of Increases in Freight Rates on Agricultural Products*, USDA Circular 847, 1950.

expenditure (Table 1). The relative importance of rail and truck transportation for agricultural commodities can also be seen from these data. Truck transportation accounted for slightly less than half of the total. Water transport, though important for some commodities, was relatively unimportant in relation to truck and rail movements. Air transportation of agricultural products is still in the experimental stage.

The major change in transportation during the last few decades has been the increasing use of the motor truck. In 1929, the truck transportation bill accounted for about 24 percent of the total transportation charges for farm products. By 1949, the trucking bill had risen to where it accounted for nearly half of the total.

*Trucking to Initial Markets*

Trucks have made the greatest inroads in the transportation of products from farms to initial markets. This segment of the transportation picture is now almost completely dominated by the truck. Nearly 90 percent of the total tonnage was moved from farms to the initial market in trucks (Table 2).

TABLE 2. *Percentage of Total Tonnage Trucked from Farms to Initial Market Compared with That Moving off Farms to Railroad or Dock for Further Shipment to Initial Market, United States, 1948*

| COMMODITY | DIRECT TRUCK HAUL | JOINT HAUL WITH RAIL OR WATER |
|---|---|---|
| | PERCENT | PERCENT |
| Grains | 91 | 9 |
| Fruits | 83 | 17 |
| Vegetables | 82 | 18 |
| Livestock | 88 | 12 |
| Milk | 97 | 3 |
| Cotton | 96 | 4 |
| Poultry and eggs | 96 | 4 |
| Tobacco | 99 | 1 |
| Miscellaneous crops | 85 | 15 |
| All commodities | 89 | 11 |

SOURCE: Margaret R. Purcell; *Statistical Findings of Survey of Transportation from Farms to Initial Markets*, Bureau of Agricultural Economics, USDA Mimeograph, 1949.

Farmers owned nearly half of the trucks engaged in this hauling operation. The other trucks were either carriers hired by the farmer or owned by the buyer. This picture varied somewhat depending upon the commodities under consideration (Table 3).

TABLE 3. *Percentage of Total Tonnage of Agricultural Commodities Moved from Farms to Initial Markets in Farm-Owned, Hired, and Buyer's Equipment, United States, 1948*

| COMMODITY | FARM-OWNED EQUIPMENT | EQUIPMENT HIRED BY FARMER | EQUIPMENT OWNED BY BUYER |
|---|---|---|---|
| | PERCENT | PERCENT | PERCENT |
| Grains | 54 | 34 | 12 |
| Fruits | 40 | 20 | 40 |
| Vegetables | 59 | 20 | 21 |
| Livestock | 21 | 61 | 18 |
| Milk | 30 | 41 | 29 |
| Cotton | 70 | 28 | 2 |
| Poultry and eggs | 27 | 13 | 60 |
| Tobacco | 44 | 52 | 4 |
| Miscellaneous crops | 46 | 24 | 30 |
| All commodities | 45 | 33 | 22 |

SOURCE: Margaret R. Purcell, *Statistical Findings of Survey of Transportation from Farms to Initial Markets*, Bureau of Agricultural Economics, USDA Mimeograph, 1949.

The growing importance of the farmer himself in this first stage of transportation has been one of the contributing factors in the decentralization of markets. A farmer owning his own truck is usually interested in hauling his own products to market. But he is not interested in spending much of his time to do the job. This has led to the growing popularity of the local markets "near home."

*Trucking to Terminal Markets*

Not only do trucks dominate the initial movement of products from farms to the nearby points of sale, but they have become increasingly important in moving products to the large wholesale markets of the country. Over three-fourths of the large terminal market receipts of live and dressed poultry, eggs, hogs, milk, cattle, and calves arrived by truck. However, less than one-half of the grapefruit, lettuce, potatoes, oranges, cheese, sheep, and lambs arrived at major markets by truck (Figure 1).

Limmer[1] has advanced four factors which he believes explain why trucks are more important for some commodities than others:

1. Shippers of commodities whose supply area is farther from the market prefer rail transportation over truck. This is particularly true if refrigeration is required. The shorter the haul involved, the greater is the use of the motor truck.

[1] Ezekiel Limmer, *Transportation of Selected Agricultural Commodities to Leading Markets by Rail and Motor Truck, 1939–50*, Bureau of Agricultural Economics, USDA Mimeograph, 1951.

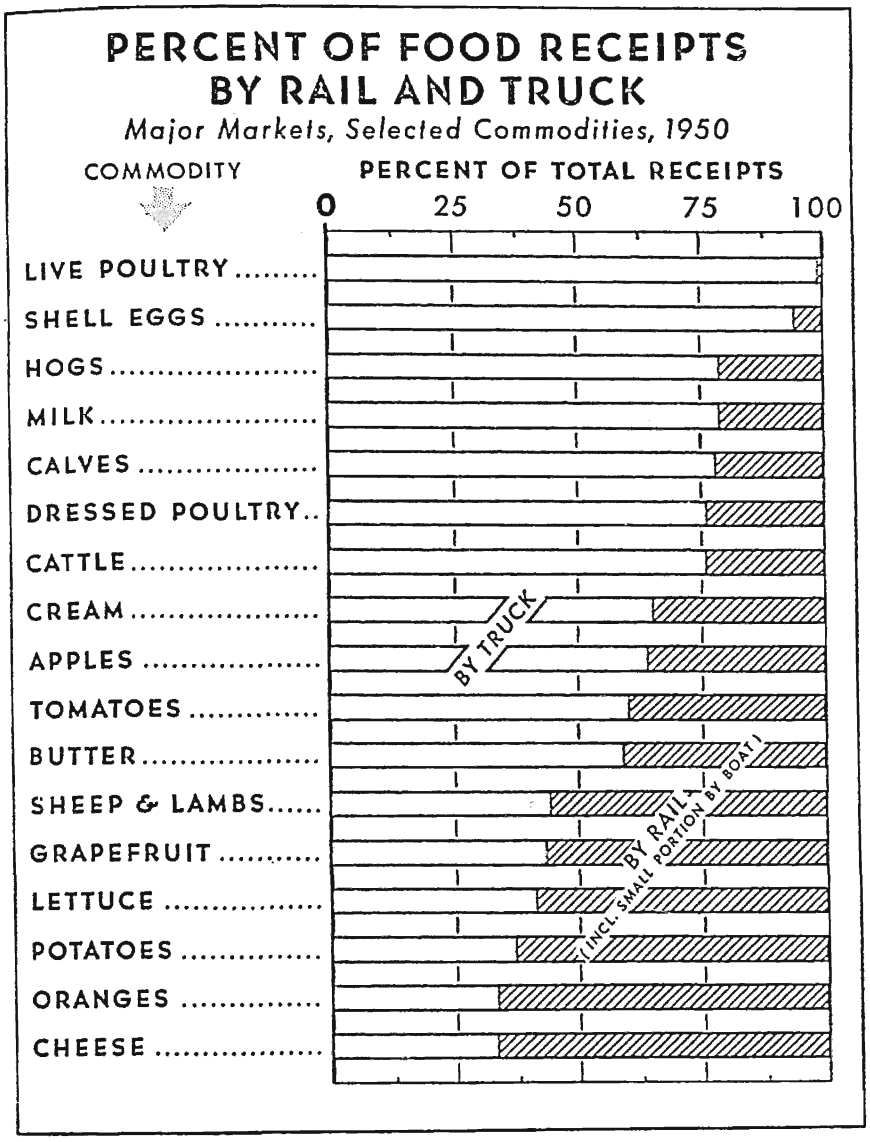


FIGURE 1. *The importance of truck transportation in moving agricultural commodities to terminal markets. (Courtesy USDA.)*

2. Commodities which have a high value per pound or are bulky have comparatively high rail rates while those which have low value or are less bulky have relatively low rail rates.
3. Some commodities are more susceptible to damage in transit. Shipment by rail freight is frequently considered to be more damaging than shipment by truck because of more jolting and handling.
4. Shippers which need speedy or more "door-to-door" service prefer the truck over the rail shipment.

There is evidence that the increased use of trucks at the expense of the railroad is continuing. About two-thirds of all Florida oranges which were unloaded at nine big city markets across the country were carried by railroads in 1949. However, during the period 1948 to 1949, a 27 percent loss in rail traffic could be traced to diversion to truck hauling.[2] It was estimated that railroads lost 17 percent of their butter volume during the same year because of the diversion to truck hauling. If the railroads had not lost any of their volume to trucks since 1941, they would have hauled 46 percent more butter in 1949.[3]

In most instances, trucks are competing most heavily with the railroads for the short-haul business from the nearer supply areas. In a study of the Washington, D.C., potato supply, it was found that the average length of haul into the city was 860 miles. Of the total truck receipts, 88 percent of them were from supply areas less than 700 miles distant. One-third of all the rail shipments came from over 1,000 miles.[4] The railroad apparently still holds considerable advantage for long hauls. However, the development of the nation-wide trucking companies with terminals and established routes are rapidly extending the satisfactory range of the truck. The trucking industry is also making progress in the field of refrigeration. Successful cross-continent runs with commodities under refrigeration have been made. However, the use of refrigerator trucks is still largely limited to relatively short runs.

*Rail Transportation*

Even though the inroads of the truck have been severe, the railroad is still a very important agency for moving agricultural products. Agricultural

[2] Donald E. Church, "Diversion of Florida Orange Traffic from Rail to Truck," *Marketing and Transportation Situation*, USDA, June, 1950.

[3] Donald E. Church, "Diversion of Butter Traffic from Rail to Truck," *Marketing and Transportation Situation*, USDA, July, 1950.

[4] Donald E. Church, "Recent Trends in Transportation of Potatoes to Washington, D. C.," *Marketing and Transportation Situation*, USDA, February, 1950; also Donald E. Church and J. R. Snitzler, *Trucks Haul Increased Share of Fruit and Vegetable Traffic*, Bureau of Agricultural Economics, USDA Mimeograph, 1953.

business is also a very important segment of the total business of the railroads. Of the total rail transportation bill, 25 percent was from agricultural and related products (see Table 1). Agricultural shippers originate about one-third of the total box-carloads. Grains, cotton, and mill products account for about 20 percent; sugar, packaged foods, and other similar products for about 10 percent; and other miscellaneous agricultural products for about 3 percent of the total box-carloads. Nearly 95 percent of all refrigerator carloads is made up of agricultural products. Fruits and vegetables account for about one-half; meat, poultry, and dairy products for about one-fourth; and various manufactured agricultural products for the remainder of these refrigerator carloads.

Railroads are still preferred for large-volume, long-distance hauling. Railroads also appear to have an advantage in cases where accurate advance notice of arrival time is desired. Though the volume moved by truck is large, the large mass-movement tasks, such as those which develop during wheat harvest, could not be accomplished without the aid of the railroad system.

### *Water Transportation*

When compared to the volume hauled by truck and rail, the volume of agricultural commodities carried on the inland and coastal waterways of the country is small. However, where speed is not important and the commodity has great bulk and weight, water transportation is often the cheapest method of transportation. For example, in early 1953 the rail freight rate for hauling wheat, corn, and oats from Minneapolis to New Orleans was $10.30 per ton. The barge rate for the same trip was $4.50 per ton.

The Great Lakes and Mississippi River system are the most important arteries of water commerce in the United States. With the development of Diesel towboats, the barge traffic on the Mississippi system jumped from 5.5 billion ton-miles in 1931 to 36 billion ton-miles in 1951. Grain is the principal agricultural product which is transported by water. One out of every five barges hauls grain. Some of the larger barge tows will now move 200,000 bushels of grain. In 1951, 46 percent of the corn and 30 percent of the wheat exported from New Orleans arrived by barge.[5]

### *Air Transportation*

Agricultural air freight is still in its infancy. The quantities of agricultural commodities which are moved by air freight are very small indeed. Cut

[5] Stanley Phillips, "Grain Traffic of the Mississippi River and Its Tributaries," *Marketing and Transportation Situation*, USDA, April, 1953; also, the *Wall Street Journal*, May 27, 1952.

flowers and nursery products are the biggest single agricultural users of air freight. Some fruits have been moved in limited quantities on an experimental basis. In a few instances, some of the very early season produce is rushed to market by air in order to secure premium prices.

The future of air transportation cannot be evaluated on the basis of current freight rates alone. Substantial economies may be forthcoming in other ways. Lighter containers may be used. Some packing and other marketing costs may be largely eliminated. For example, the usual methods of handling off-season tomatoes is to pick them green and ripen them after they reach the consumption centers. If tomatoes were picked when vine-ripened and shipped by air overnight to the markets, the ripening costs of 2 to 3 cents per pound might be eliminated. The air shipment of lettuce from California might substantially reduce the icing costs. Under normal rail shipment, icing costs are about 50 cents per crate; this cost could be largely eliminated with air shipment.[6]

In addition to these possible savings in current marketing costs, there is the unknown factor of the effect upon demand. Many believe that if consumers were supplied with tree-ripened fruit they would buy more at the same or higher prices. Perhaps it is in this area of increased consumer acceptance that the real net gain from air transportation may develop.

The potential for air transportation of selected high value, perishable, and seasonal products appears considerable. However, the impact upon marketing methods and costs will be great. Changes probably will have to be made in harvesting, processing, packaging, and the assembly of the commodity.

## FREIGHT RATES

The level of and changes in freight rates have always been a matter of concern to agricultural producers. With the inelastic nature of agricultural supply, at least in the short run, changes in the freight rate structure are absorbed by agricultural producers through lower farm prices. Also, changes in rates which are unequal for various sections of the country may change the competitive advantage of producers in one section compared with those in another section. It was the rural agitation of the Grange movement of the 1870's which is credited with laying the groundwork for the creation of the Interstate Commerce Commission in 1887.

### *The Freight Rate Structure*

The railroad freight rate structure of the United States is a very complex, and often irrational, thing. In general there are two basic types

[6] R. W. Hoecker, *et al.*, *Air Transport of Agricultural Perishables*, USDA Misc. Publication 585, 1946.

of rates, the class rates and the commodity rates. Class rates are those which are established for a limited number of broad categories into which thousands of different products can be placed. This eliminates the necessity of establishing individual rates for each different product. Commodity rates are those which are established specifically for an individual commodity considering the needs and problems of shippers. Such rates are established for large-volume, low-valued items such as coal, ore, and grain. Most agricultural products move under commodity rates. Over four-fifths of the total carloads of all products is moved under commodity rates.

In establishing the class rates, the country is divided into five rate territories each with different rates. These regional differences in rates have resulted in continual controversy. It is claimed that rate differentials have encouraged industrial development in the northeastern region of the United States, and discouraged such development in the southern and western regions. This situation results in the long hauls to move raw products eastward for manufacture.

Just how much the differential freight rate structure has retarded the industrial development of some sections of the country is a matter of debate, but there is general agreement that regional rate differences cannot be entirely justified on the basis of cost difference.[7] Many contend that changes in the freight rate structure would encourage industrial development in the areas near the raw materials. Since most manufacturing and processing generally result in less bulky and higher-valued products than the original raw material, this could mean substantial savings in the transportation costs.

Commodity rates are generally lower than class rates. These rates vary somewhat in line with the "cost of service." Some of the factors considered here are the length of haul, weight that can be shipped in a car, and the risk of loss and damage. The great variation in distance and bulk among commodities can be seen from studying Table 4. The effect of the length of haul can be seen in the cost per hundredweight. Sugar beets which are shipped for only a very short distance cost much less per hundredweight than apples or lettuce which travel long distances. However, the bulk weight of commodities also affects the cost as can be seen from variations in the revenue per ton-mile.

There are also rate differences depending upon whether the shipment is in carlot (c.l.) or less than carlot (l.c.l.) amounts. The rate is generally lower on the carlots than the less than carlot shipment. This preferential

[7] Ralph L. Dewey, "Interterritorial Freight Rate Differences in Relation to the Regionalization of Industry," *Journal of Farm Economics*, May, 1945; Frank L. Baron, "Length of Haul and Farm Commodity Prices," *Journal of Farm Economics*, May, 1941.

rate for carlots was one of the reasons for the development of early cooperative livestock shipping associations. As the railroad was the only method of moving livestock to major markets, the association assembled small lots from individual farmers so they could ship into the terminal markets at carlot rates.

TABLE 4. *Average Length of Haul, Revenue, and Load of Selected Agricultural Commodities, 1948*

| COMMODITY | REVENUE | | LENGTH OF HAUL, SHORT-LINE * | LOAD PER CAR |
|---|---|---|---|---|
| | PER SHORT-LINE TON-MILE * | PER HUNDRED-WEIGHT | | |
| | CENTS | CENTS | MILES | TONS |
| Flour, wheat | .81 | 27 | 662 | 37 |
| Soybean oil cake | .98 | 24 | 485 | 38 |
| Cereal food preparations | 1.16 | 37 | 635 | 24 |
| Sugar beets | 1.22 | 5 | 84 | 39 |
| Barley and rye | 1.30 | 28 | 435 | 49 |
| Apples | 1.41 | 137 | 1,950 | 20 |
| Oats | 1.42 | 27 | 384 | 40 |
| Sorghum grain | 1.43 | 32 | 454 | 52 |
| Wheat | 1.46 | 27 | 365 | 53 |
| Corn | 1.50 | 25 | 329 | 51 |
| Oranges and grapefruit | 1.55 | 123 | 1,529 | 23 |
| Lettuce | 1.64 | 184 | 2,247 | 12 |
| Potatoes | 1.65 | 68 | 823 | 21 |
| Hay | 1.99 | 45 | 448 | 15 |
| Cotton in bales | 2.01 | 56 | 556 | 21 |
| Soybeans | 2.48 | 19 | 152 | 50 |
| Tobacco, unmanufactured | 3.03 | 61 | 400 | 15 |

* Short-line mile is the shortest practicable railroad distance between origin and destination; actual haul usually is somewhat longer.

SOURCE: Donald E. Church, *Effect of Increases in Freight Rates in Agricultural Products*, USDA Circular 847, 1950.

Rates are also differentiated depending on whether they are local or through rates. Because of the terminal expense involved, longer hauls usually are moved at a lower rate per mile. The through rate is less than the sum of several local rates covering the same distance.

There also are several special services available to rail shippers. Two such services of especial importance to agriculture are the transit privilege and the diversion and reconsignment privilege. The transit privilege permits a shipper to stop a shipment en route to permit some processing or operation to be performed and then reshipping on to the original destination, still at the original through rate. This privilege is widely used by the grain

trade. Wheat en route from a western point to the East can be stopped for cleaning, grading, and milling. The flour can then continue onward at the original through rate from the initiating point to its eastern destination.

The diversion and reconsignment privilege allows a shipper to change the destination of his product either while en route or after arrival at the originally desired destination. Within limits, reconsignment and diversion can take place and the through rates apply to the new destination. This service is especially valuable to the shippers of fresh fruits and vegetables. Often produce is sold after it is en route so that the exact destination cannot be known at the time it is shipped. Often, too, the original market for which the shipment was intended becomes glutted and prices break so that it would be more profitable to reship to another market. The use of diversion and reconsignment aids better allocation of supplies of perishables and reduces the spoilage and waste which accompany market gluts.

A word should be said concerning motor truck freight rates. Most trucks operating for hire can be classified either as common or contract carriers. Common carriers serve the general public at a published schedule of charges. Such carriers are usually large concerns with terminals and fleets of trucks. Contract carriers are available for hire at rates established by arrangement between the individual trucker and the shipper. The rates of interstate common carriers fall under much the same regulatory machinery as railroads. Contract carrier rates, however, escape much of this regulation. Contract carriers are probably of greatest importance to agriculture. Because of the differences in regulations, rates vary widely, as also do the services provided. Few generalizations can be made concerning truck rates. It probably is true, however, that much of the competitive advantage of trucks over railroads arises not so much from rate differences as from flexibility and convenience.

### *Making of Rail Freight Rates* [8]

In 1887, the Interstate Commerce Commission was established to police the competitive practices of the railroads. Since 1910, this Commission has also passed on proposed changes in the rate level. The present rate structure is the result of these various decisions of the Commission as well as a great number of changes instituted voluntarily by the carriers. Voluntary reductions have sometimes been made by the railroads in order

[8] Much of the information in this section is taken from the very excellent publication by Ezekiel Limmer, *Chief Factors Underlying General Changes in Rail Freight Rates, with Special Reference to Farm Products, 1910–51*, USDA, Bureau of Economics, May, 1951. Mr. Limmer discusses the history of each rate change since 1910 and the evolution of the rate-making philosophy.

to meet specific competitive situations. However, basic levels of rates have been established by the decisions of the Commission.

From 1910 to 1951, twenty-nine decisions have been rendered by the Commission. The large majority have been on the petitions of carriers for higher rates. Only three of the decisions involved petitions for rate decreases—all of which were initiated by shippers (Table 5).

TABLE 5. *Railroad Freight Rate Level Decisions Rendered by the Interstate Commerce Commission, 1910–51*

| | TOTAL PETITIONS | PROPOSED INCREASES | PROPOSED REDUCTIONS |
|---|---|---|---|
| Total number of decisions | 29 | 26 | 3 |
| Favorable to proposed change | 21 | 19 | 2 |
| Unfavorable to proposed change | 8 | 7 | 1 |

It is the job of the Commission to see that the rates are "reasonable and just." What are the standards for such rates? Some measuring sticks for answering this question have been laid down by legislative action and are continually being revised by court decisions. The Commission was directed originally by Congress to provide for an adequate railroad network. The first basis for making decisions was that rates should give a fair return upon the property value of the railroads. In a resolution passed by the Congress in 1925, the Commission was further directed to consider "the conditions which at any time prevail in our several industries. . . ." In the 1930's, the emphasis shifted from a fair return upon property value to a return which would enable the carriers to attract additional capital from investors. The Commission was then given the additional directive to give consideration to the effect which the rates would have on the movement of traffic.

The Commission, then, is faced with the dilemma of establishing rates which will yield an adequate return (as measured against some standard) on the one hand, but which will consider the economic "ability to pay" of the shipper on the other. This is the heart of the modern rail rate problem. Diversion to trucks is cutting into rail volume. Operating costs of railroads may rise, or remain stable, when other prices are falling. To provide revenue which will maintain an adequate rail system may require rate increases at the very time when shippers need a downward revision in rates. The Commission has answered this situation on various occasions in the past by exempting some commodities from rate increases and by giving special treatment to others.

*Freight Charges and Agricultural Prices*

The general antagonism between farmers and the transportation agencies can be at least partially explained by the historic relationship between freight rates and agricultural prices. The outstanding characteristic of freight rates has been their relative stability and their tendency to change in only one direction--up. A study of Figure 2 will show two pertinent

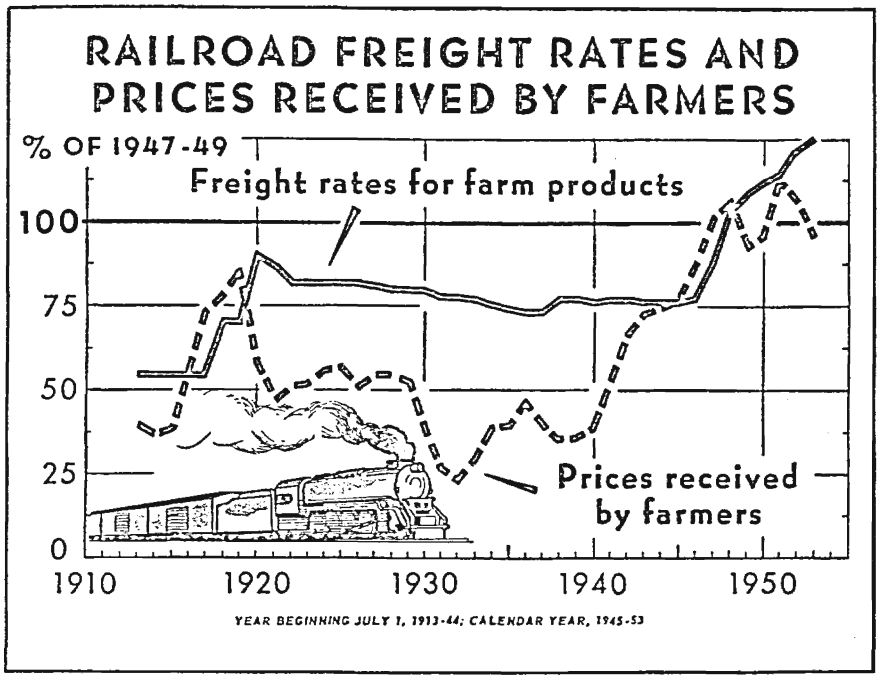


FIGURE 2. *Railroad freight rates and prices received by farmers, 1913 to 1953, showing the relative stability of freight rates compared with farm prices.* (*Courtesy USDA.*)

generalizations. First, rates remain relatively stable during the first stages of a rise in agricultural prices, but they finally increase sharply. This increase may occur even after the rise in farm prices is over and has turned downward. Secondly, once the rate increase is accomplished, the new level tends to become permanent even though other prices decline sharply.

These relationships mean that during rising prices, freight rates decline relative to farm prices. But during falling prices, the rates rise relative to farm prices. The data on wheat prices and freight rates presented in Table 6 illustrates this. The selected years given show the major changes which have occurred in prices for wheat. In the immediate postwar years

of 1919 and 1946, wheat prices had risen from prewar levels, but the freight rate had increased only slightly. During those years, it required only 4.4 and 6.9 bushels to pay the freight on 100 bushels. However, in 1921 and 1932, prices broke sharply. In 1921, freight rates actually increased and in 1932 they remained unchanged. The results were that it required 11 bushels in 1921 and 24 bushels in 1932 to pay freight on 100 bushels of wheat.

This freight-price relationship becomes particularly critical for those shippers located long distances from markets. The inflexibility of the rates often explains why a sharp market price decline for perishables, for example, will result in California growers either destroying or leaving crops unharvested. After freight and harvesting costs are met, the result may be an actual net dollars loss to the grower. He logically attempts to minimize his losses by not incurring these expenses by not harvesting either part or all of his crop.

TABLE 6. *Wheat Prices and Freight Rates from Brewster, Kansas, to Kansas City, Selected Years*

| SELECTED YEARS | AVERAGE PRICE PER BUSHEL, KANSAS CITY | FREIGHT RATES PER BUSHEL FROM BREWSTER, KANSAS, TO KANSAS CITY | WHEAT REQUIRED TO PAY FREIGHT CHARGES ON 100 BUSHELS |
|---|---|---|---|
| | CENTS | CENTS | BUSHELS |
| 1915 | 119 | 8.7 | 7.3 |
| 1919 | 242 | 10.6 | 4.4 |
| 1921 | 120 | 13.2 | 11.0 |
| 1925 | 163 | 12.3 | 7.5 |
| 1932 | 51 | 12.3 | 24.1 |
| 1936 | 121 | 12.6 | 10.4 |
| 1942 | 126 | 13.4 | 10.6 |
| 1946 | 209 | 14.4 | 6.9 |
| 1950 | 228 | 20.2 | 8.8 |

SOURCE: Adapted from data in *Chief Factors Underlying General Changes in Rail Freight Rates* by Ezekiel Limmer, Bureau of Agricultural Economics, USDA Mimeograph, 1951.

## REDUCTION OF TRANSPORTATION COSTS

### *Rates and Methods of Transportation*

There appears to be little justification for basing hopes of reducing transportation costs on lower truck and rail freight rates. Past history offers little encouragement that rates can be reduced substantially. Rather, the future probably holds increased rates. Also, competition between the trucks and railroad carriers cannot be counted upon to accomplish any major re-

duction in costs. Though the diversion of business from railroad to truck will probably continue, there will always be a place for both types of carriers. The principal advantage of trucks lies in their speed, versatility, and convenience in short hauls and to small shippers. The advantage of rail carriers is their ability to carry huge volumes over long distances with dependability and regularity.

With the increased development of the larger truck and nation-wide trucking companies, the trucking industry will probably be subjected to more and more regulations similar to those covering railroads. There is a growing tendency for greater state taxation on trucking. With ever-growing highway maintenance problems, states are insisting that trucks pay a larger share of the road costs. Both trucks and railroads will probably improve the efficiency of their operations with the passing of time. These improvements cannot be depended upon to do more than hold down the pressure for higher rates. It also seems likely that the rate advantages now held by some segments of the truck industry will gradually disappear.

Unit costs of operation of the transportation agencies also are relatively fixed. This means that in good or poor times for the economy as a whole, there is only a very sluggish change in operating expenses. Because of this, there is little hope for increased flexibility of rates. This means that in periods of low prices, transportation rates will continue to be relatively high. In times of prosperity, they will be relatively lower. Some sort of public subsidization is probably the only way in which any considerable flexibility could be obtained in rates.

TABLE 7. *Maximum Gross Weight and Length Limits Permitted by States, 1950, Semi-trailer Combinations*

| MAXIMUM WEIGHT LIMITS | NUMBER OF STATES | MAXIMUM LENGTH PERMITTED | NUMBER OF STATES |
|---|---|---|---|
| Up to 45,000 pounds | 7 | Under 46 feet | 19 |
| 45,000 pounds | 29 | 46 to 55 feet | 13 |
| Over 45,000 pounds | 12 | 55 feet and over | 16 |
| Total | 48 | Total | 48 |

SOURCE: Margaret R. Purcell, *Interstate Barriers to Truck Transportation*, Bureau of Agricultural Economics, USDA Mimeograph, 1950.

Part of the cost of truck transportation arises from the barriers which individual states have erected in the form of varying regulations on weight and dimensions (Table 7). Such regulations make it impossible for trucks to pass freely from state to state. Loads often must be changed or rerouted if the truck passes over state borders. There is a movement among states

to work out these differences and establish more uniform regulations. Greater uniformity in these regulations should increase both the speed and efficiency of truck movements.

About the only hope for rate reduction is to maintain a critical surveillance of the requests for rate increases and to secure special approaches to agricultural problems whenever possible. This does not mean, however, that the transportation bill cannot be reduced.

*Other Approaches to Cost Reduction*

There are other means of reducing the real cost of transportation which appear to offer greater promise than a reduction in rates. These are various improvements and changes in the utilization of transportation by shippers of agricultural products. The pressure for more efficient use of an overburdened transportation system during World War II uncovered many ways in which the real cost of transportation could be cut. Some of the ways which may reduce transportation costs are as follows:

(1) *Obtain maximum use of the transportation facility in terms of load hauled and mileage traveled.* This would include the elimination of excessive duplication of some transportation facilities and the better arrangement of routes so as to assemble a full load more efficiently. The pick-up of two or more commodities might be combined to secure a larger load with less travel. Careful planning in many instances might eliminate an empty return trip which often occurs when commodities are hauled to market.[9]

The local assembly of products from farm to initial market offers one area in which more effective use of transportation equipment could be obtained. This has been illustrated by several studies of milk assembly. In one Indiana study it was found that the milk assembly routes for one city ranged upward from sixty-two miles in daily travel. The milk load per mile ranged from thirty pounds to sixty-seven pounds.[10] A Kentucky study of milk routes found that several drivers were making side trips over roads covered by other trucks of from three to fourteen miles in order to pick up milk of a single producer.[11] It has been found that considerable savings in transportation costs might also be made by the combination of some routes during the fall and winter months. During the winter, when milk production is at its seasonal low, many routes carry much less than capacity

[9] D. O. Hammerberg, "Wartime Problems of Conservation of Transportation," *Journal of Farm Economics*, February, 1943.

[10] E. H. Matzen, *A Survey of Country Milk Collection Routes in the Fort Wayne Area of Indiana*, Indiana Bulletin 520, 1947.

[11] C. D. Phillips, *Collection of Milk and Cream from Farms in Kentucky*, Kentucky Bulletin 479, 1945.

loads. The average daily load in February for some routes studied was less than half of practical capacity. One study summarizes the savings possible through combinations as follows:

> For example, two haulers collecting milk in adjacent country areas 40 miles or more from the city could save about 80 miles daily. At variable costs of 6.54 cents per mile, savings would be $5.23 or about $2.60 per hauler per day. On many routes such temporary consolidations would be possible from 60 to 120 days each year.[12]

Farm assembly of products is not the only area where poorly planned and underutilized transportation facilities exist. The pressures to conserve tires and gasoline during World War II exposed many other areas in the marketing system where the same type of savings could be made. Every-other-day delivery of bottled milk to consumers was substituted for daily delivery. Better planning found return loads of fertilizer and other needed supplies for the trucks which transported livestock to central markets. Often many of these trucks previously had made the return trip empty.

(2) *Reduce the spoilage, damage, and breakage during transportation.* This is an area which offers considerable opportunity to reduce real transportation costs. Many of the remedies to reduce spoilage and breakage are remarkably simple. Three factors account for much of the wide variation in damage claims presented to railroads. These are differences in the value of the carload because of the density and bulk of the product, types and suitability of the containers, and the degree and efficiency of the loading and bracing methods used in preparing the car for shipment.[13]

Nearly three-fourths of the total damage claims for fruits and vegetables occurs because of unsuitable and faulty containers and poor loading practices (Table 8). These are factors subject to control and improvement. For example, it was found that cantaloupe crates loaded on end had only about one-third the breakage as when the crates were loaded on their sides and lengthwise of the car. Also, a new method of bracing the crates in the car was found to be superior to the one commonly used.[14] The tying of a single wire around lettuce crates was found to reduce crates damaged in shipment from 11.5 percent to 6.2 percent.[15] Experimentation is now going

[12] N. T. Pritchard and W. H. Cope, *Milk Assembly in the Fort Wayne Milkshed*, Indiana Bulletin 559, 1951, p. 23.

[13] P. L. Breakiron, "Reduction of Loss and Damage in Rail Transportation of Fresh Fruits and Vegetables by Improved Loading Methods," *Marketing and Transportation Situation*, USDA, July, 1946.

[14] J. C. Winter and B. M. Masters, *Comparisons of Transit Damage Loading Time and Materials Costs under Various Methods of Loading Cantaloupe*, Production and Marketing Administration, USDA Mimeograph, 1952.

[15] R. W. Hoecker, "Wire Ties Cut Lettuce Losses," *Marketing Activities*, USDA, February, 1950.

on with new containers and new packing methods for many commodities. Many of the methods and containers used have not changed from the early days of railroad transportation. Imagination coupled with a lack of reverence for the status quo can produce cost-saving results.

TABLE 8. *Claim Payment Distribution Made by Railroads, 1944*

| CAUSE | FRESH VEGETABLES | FRESH FRUITS (EXCLUDING CITRUS) |
|---|---|---|
| | PERCENT | PERCENT |
| Unallocated damage * | 73.8 | 70.5 |
| Temperature failure | 8.0 | 15.3 |
| Delay | 7.5 | 5.4 |
| Train accidents | 2.2 | 3.0 |
| Improper handling in yards | 1.7 | 2.8 |
| All other causes | 6.8 | 3.0 |

* Includes breakage of containers, loss and damage due to excessive rough handling in transit, faulty or improper methods of packaging, loading, and bracing.

(3) *Change the product itself.* In this area probably are some of the greatest potentialities for attacking the transportation cost problem. High damage claims, to a substantial extent, hinge around the nature of the product itself. The product should not be accepted as a given, unchangeable fact. It, too, can be changed.

High perishability is one of the basic reasons for expensive transportation. But poor quality products are more perishable than top quality products. An expanded program of farm selling on grades might result in products being more closely graded before shipment. Only those products best able to stand up during movement then would move long distances. Those which might deteriorate more quickly would be sold in the nearby markets.

Bulky, low-valued shipments can also be changed. The shipment of frozen, concentrated orange juice in place of the whole fruit is an example of one type of possible change. The production-area slaughter of livestock and the shipment of carcasses rather than the live animals is another example of product change which can be made. In general, production-area processing will result in a less bulky, higher-value—and oftentimes less perishable—product for shipment to consumption areas.

(4) *Reduce barriers to interstate shipment.* As has been pointed out, the various states have different truck weight limits, licensing regulations, and so forth. Such differences often cause costly rerouting or reloading. A "truckload" in one state may be an illegal "overload" in another. One

has only to notice the weigh stations that exist at the state borders to realize that there are barriers to movement. An eliminaion of these barriers through increased uniformity of regulations could reduce transportation costs.

*The Transportation Bill Will Remain High*

Though a fresh and imaginative approach can probably lower costs, the total transportation bill will remain high. The inherent nature of agricultural production and products makes for an expensive transportation situation. The great distances between production and consumption areas will still exist in a large country. The job of assembling the production from scattered small production units will remain an expensive operation. Many commodities will still be perishable, resulting in high spoilage and extensive use of refrigeration. The seasonal nature of agricultural production will continue to create peak transportation demands at some seasons. Costs of the transportation agency will not suddenly become flexible so that rates can respond quickly to price level changes.

We cannot finish a review of transportation without mentioning the place of society as a whole. The actual transportation costs were probably well above the $14 billion shown in Table 1. This is because of the varying amount of public subsidy which have gone—and are going—into the nation's transportation system. We have already noted the complaint that trucks are not paying their own way, since society subsidizes them in the form of the highway system and the like. The railroads in their early days also had major subsidies in the form of land grants. Air transport has received both direct and indirect public help in such form as publicly built airfields. Water transportation, of course, receives large amounts of public aid in the form of river-bed and canal work, locks, dams, and so on. Many students of transportation maintain that what may be the cheapest way of transportation for an individual shipper may not be the lowest cost method for society as a whole because of the varying subsidy picture.

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# CHAPTER THIRTEEN

# *Storage*

The function of storage is that of having the product available at the desired time. It is the function which matches the pattern of production to the pattern of consumption from the standpoint of time. Storage over a period of several years is not a normal situation for agricultural commodities. As pointed out in our study of price making forces, normally we eat what we produce. Carry-overs from one production season to another under freely operating market situations are usually only enough to assure continuity of processing and distributive operations. The public's idea of huge storage holdings of agricultural products has stemmed to some degree from the operation of the price support programs of the government.

## STORAGE OPERATIONS

There are two general types of normal storage operations. One is that which equalizes seasonal production to the pattern of demand. The other is the storage at all times within trade channels which is necessary to keep the marketing system operating without interruption. The first type of storage operation is undertaken by elevators, warehouses, and other places of mass accumulation. The latter type of storage operation is largely the operating inventories of the various manufacturers, wholesalers, retailers, and to a small extent consumers of the nation.

### *Seasonal Production and Storage*

Much of the output of agriculture is harvested during relatively short periods of the year. The grains, cotton, tobacco, fruits, and vegetables are all highly seasonal in nature. Even the production of livestock, eggs, and dairy products, though continuous throughout the year, has wide variations between the high and low periods of production. The desire for these

products by consumers, however, is often quite constant throughout the year.

To the extent that products are not perishable, they can be placed in storage at harvest and then released little by little as the year progresses. In this way storage stocks tend to equalize the amounts available for consumption throughout the year. This counterbalancing relationship is illustrated by the production and storage patterns of the commodities shown in Figure 1. As production increases seasonally, products move into

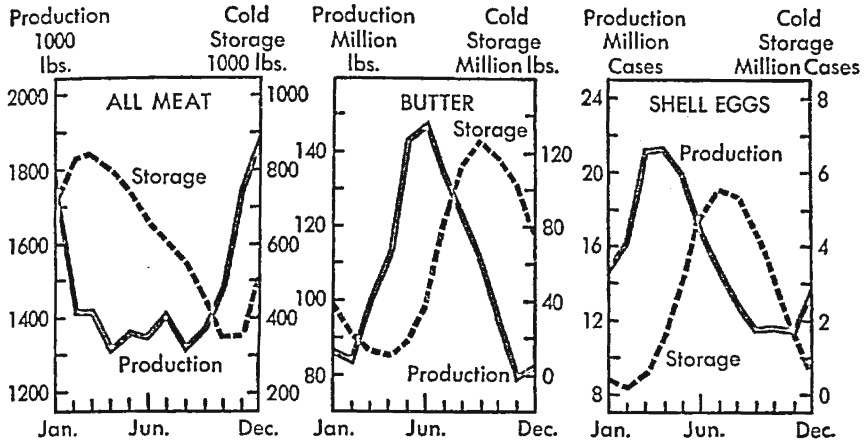


FIGURE 1. *Relations of monthly storage holdings to the seasonal pattern of production, 1946–1950 average.*

storage. In this way, the amount available for current consumption is reduced. Then, as production declines, stocks move out of storage and into consumption. During this latter period amounts available for consumption are maintained at levels above current production. For example, total meat production starts increasing about September and reaches its peak levels during December and January. Starting about October, cold storage holdings increase and continue to grow until about March. From March on through the summer, when meat production is low, meat moves out of storage and into consumption.

In the case of storable crops which are harvested during a very short time of the year, the entire production must be stored and doled out for consumption throughout the remainder of the year. Table 1 shows the amount and place of storage of two crops as we move through the year. Corn is harvested during October and November, therefore January 1 storage holdings are the largest of the year. Then they work down to the carry-over levels of October. Wheat storage is highest during the quarter

following the June–July harvest. It then works downward to its carry-over levels of July 1. As the marketing year progresses, stocks gradually move off the farms and into terminal market and processor storage.

TABLE 1. *Amount and Place of Corn and Wheat Storage by Quarters, Average 1946–50*

| QUARTER AND COMMODITY | ON FARM | TERMINAL MARKETS | INTERIOR MILLS, ELEVATORS, WAREHOUSES | MERCHANT MILLS | GOVERNMENT OWNED STOCKS * | TOTAL STORAGE |
|---|---|---|---|---|---|---|
| | MILLION BUSHELS | | | | | |
| Corn: | | | | | | |
| January 1 | 2,042 | 31 | 51 | — | 50 | 2,174 |
| April 1 | 1,287 | 29 | 47 | — | 48 | 1,411 |
| July 1 | 766 | 17 | 37 | — | 47 | 867 |
| October 1 | 366 | 13 | 34 | — | 64 | 447 |
| Wheat: | | | | | | |
| January 1 | 373 | 137 | 156 | 106 | 7 | 778 |
| April 1 | 206 | 88 | 102 | 71 | 5 | 472 |
| July 1 | 62 | 73 | 51 | 32 | 4 | 222 |
| October 1 | 531 | 204 | 248 | 130 | 5 | 1,118 |
| | PERCENT OF TOTAL STORAGE | | | | | |
| Corn: | | | | | | |
| January 1 | 93.0 | 1.4 | 2.4 | — | 2.3 | 100.0 |
| April 1 | 91.3 | 2.0 | 3.3 | — | 3.4 | 100.0 |
| July 1 | 88.3 | 2.0 | 4.3 | — | 5.4 | 100.0 |
| October 1 | 75.2 | 2.9 | 7.5 | — | 14.4 | 100.0 |
| Wheat: | | | | | | |
| January 1 | 47.8 | 17.6 | 20.1 | 13.6 | 0.9 | 100.0 |
| April 1 | 43.7 | 18.7 | 21.7 | 14.9 | 1.0 | 100.0 |
| July 1 | 27.8 | 33.2 | 22.9 | 14.4 | 1.7 | 100.0 |
| October 1 | 47.5 | 18.2 | 22.2 | 11.6 | 0.5 | 100.0 |

* This is not too representative, for the government is in and out of the market picture as the price support program is brought into play some years more than others.

SOURCE: USDA statistics.

### *Where Commodities Are Stored*

Because of the great number of places where goods can be stored, an accurate inventory of storage capacity is almost impossible. One writer has estimated that we have about 100 cubic feet of storage space for each person living in this county, excluding open-air storage.[1] In his inventory of the storage capacity, he divides the capacity into two categories—that which we commonly think of as storage and that which is less commonly

[1] F. A. Harper, "How Much Food Can We Store in the United States," *Farm Economics* (Dept. of Agricultural Economics, Cornell University), April, 1944, pp. 3577–3581.

thought of as storage (Table 2). The most important single storage facilities are for the on-farm storage of grain. This does not include open-air storage. The use of open-air storage is often temporarily quite great, especially during the harvest season.

TABLE 2. *Estimated Storage Space That Could Be Used for Food*

| KIND | PERCENT OF TOTAL | KIND | PERCENT OF TOTAL |
|---|---|---|---|
| STORAGE COMMONLY THOUGHT OF | | STORAGE LESS COMMONLY THOUGHT OF | |
| Cold storage—mainly for perishables (meat, fruits, vegetables, etc.) | 5.7 | Perishable refrigerator space in stores, etc. | 5.1 |
| Mainly for semiperishables | 0.7 | Mainly for semiperishables in farm cellars, homes, stores, etc. | 5.9 |
| Mainly for nonperishables: | | Mainly for nonperishables: | |
| Grain, off-farm | 10.0 | Grain, on-farm | 55.9 |
| General warehouses | 2.3 | Stores, homes, etc. | 14.4 |
| Total of commonly thought of types of storage | 18.8 | Total of less commonly thought of types | 81.3 |

Commodities, of course, change hands and place of storage during the season. Grain may be retained for a time in farm storage. It then may be moved to an elevator, and finally to millers and processors. Reference to the percentage portion of Table 1 will illustrate the relative importance of various places of storage. Farm storage is of prime importance for corn which will most likely be fed to livestock on the farm. Terminal and milling facilities are of importance in handling the wheat crop—a food grain.

A very considerable proportion of total storage takes place within the channels of trade in the form of inventories. Retail and wholesale store shelves as well as stock rooms of processing plants are important.

In terms of daily consumption, there is a very small amount of storage space available for perishable items. It is estimated there are less than five cubic feet of refrigerator warehouse space per person in this country. About two-thirds of this is cooler space and only one-third is freezer space. To this must be added the freezer lockers which developed rapidly during the latter part of the 1940's. There were only 1,269 frozen food locker plants operating in the United States in 1938. By 1948 this number had increased to about 10,900.[2] After World War II, ownership of home freezers grew rapidly. Frozen food capacity in the retail stores has also increased rapidly.

[2] North Central Regional Bulletin 21, *Frozen Food Lockers and Home Freezers*, Wisconsin Bulletin 490, 1950. From this study came many other bulletins issued by individual states.

All of these must be considered as part of the cold storage capacity of the country.

*Public Warehouse Supervision*

The United States Warehouse Act gives the Secretary of Agriculture authority to supervise warehouses operating under its provisions. Agitation for some type of public supervision of commodity storage arose when farmers were unable to secure adequate loans on the crops which they wished to store. Such a situation often forced the farmer to sell his crop immediately upon harvest in order to secure needed money.

Whether a warehouse wishes to operate under the provisions of the Act is optional. However, if it desires to so operate, then the operator and his business must meet certain requirements. The warehouse must pass inspection for its condition and facilities and the operator furnish bond and a guarantee of his financial responsibility.

All commodities which are stored in a supervised warehouse are inspected for quantity, condition, quality, and insurance coverage. The owner is then given a warehouse receipt showing the exact nature of the commodity in storage. Since the commodity has been verified by a third party, these receipts are usually accepted by banks as collateral for loans ranging up to 70 to 90 per cent of the receipt value. In this way the person who does not wish to sell his product immediately has a source of reasonable credit through which he can secure needed cash. Here, then, is another illustration of the close interrelationship of various marketing functions. The public warehouse system is a very important factor in financing the marketing processes. The negotiable nature of the warehouse receipts also greatly facilitates the transfer of title while reducing the amount of physical handling.

About 1,100 warehouses operate under federal supervision—others may operate under supervision of the various states. However, the licensed warehouse capacity in the United States varies greatly for different commodities. Such storage is available for about 75 percent of the cotton crop, about 8 percent of the grain crop, and for a still smaller proportion of the tobacco and wool crops. Nearly all commodities stored under the Act are those which utilize dry, nonrefrigerated storage.[3]

## COSTS OF STORAGE

It is extremely difficult to isolate realistically the cost of the storage function from the costs of the functions of financing and risking. With the

[3] H. S. Yohe, "Storage Under License," *Marketing Activities*, USDA, December, 1948.

holding of goods, one either foregoes possible money income or borrows money against the goods. Also, with the holding of goods one incurs various kinds of risk. In determining the total costs of holding commodities, five possible categories of costs must be considered as follows:

1. The costs necessary to provide and maintain the physical facilities for storage. These costs would include such items as repairs, depreciation, and insurance against loss.
2. The interest on the financial investment in the product while it is in storage. Whether money is actually borrowed or not, this is a cost which should be assessed at the rate of interest which would have to be paid if money were borrowed during the storage period.
3. The cost of quality deterioration and shrinkage during storage. Most commodities either deteriorate in quality or shrink in volume—or both—while in storage. In a few cases, some commodities, such as corn, may increase in quality while shrinking in volume. In such cases, storage may result in a net gain instead of a net loss for this particular factor.
4. The loss which may result from poor consumer acceptance of the stored as against the "fresh" product. Packing companies maintain that frozen meat will be accepted by consumers only at a price discount, even though quality as measured by the grading system has not deteriorated. There is consumer resistance to storage eggs compared to fresh eggs, though the quality as measured by the grading system may be the same. This is not a problem in all commodities. Nor do such consumer preference patterns remain unchanged. For example, there is evidence that the widespread acceptance of food lockers and home freezers is overcoming the resistance to frozen meats.
5. The risk that general business conditions might deteriorate and the general level of prices decline. Under these circumstances, the product might have to be sold at less than its into-storage value. The possibility of a favorable movement in prices, on the other hand, is a major factor in encouraging speculative storage.

## WHO SHOULD STORE?

Like the other functions of the marketing system, storage must be done, but there is no dictation as to who should do it. Obviously, the storage which occurs within the trade channels in form of inventories is done by various businessmen of the system. But the storage throughout the season may be done by several agencies—the farmer, the commercial storage operator, the food processor, the speculator, and others.

Costs of storage are not necessarily the same in all positions in the

marketing channel. Though the theoretically perfect seasonal price fluctuation covers the cost of storage, it does not necessarily cover the operations of highest cost. Even though storage must be done, it is not equally profitable for all individuals at all levels of the marketing channel to store.

Whether or not the farmer should store his own products is a debated point. No generalized rule can be made, but the case of each commodity must be decided on its cost-return conditions. In some circumstances, it may pay the farmer to build his own facilities and carry out his own storage. In others, it may be best to rent commercial storage. Or in still other circumstances, he may best sell at harvest and let some other agency of the marketing system undertake the storage operation. Neither can the profitability of farm storage be generalized for all years. The outlook for general business conditions may make it very desirable for storage one year and not for another.

## REDUCING STORAGE COSTS

In a specialized economy, the function of storage will always be a complex and expensive one. It is even more so when the production and consumption patterns are as different as for agricultural products. Like transportation, storage will remain a costly function in agriculture marketing. But this is no reason to write off the storage function as something which cannot be improved. We have already considered the various factors which must be considered in determining total storage costs. It is to these we can look for ways to lower the real costs of storage. Some of the more fruitful possibilities may be listed as follows: [4]

1. Reduction of the amount of deterioration during the storage. Great advances have been made in discovering the best storage conditions for individual products. It is now recognized that different commodities have different temperature and humidity requirements for optimum maintenance of quality. Many examples could be noted. Temperatures of 30° to 32° F. are usually recommended for apple storage, but it has been found that Grimes Golden apples hold up best at 34° to 36°. For most fresh products the recommended relative humidity is 80 to 90 percent, but 70 percent is better for onions and nuts. Temperature and humidity conditions are now known to be important even for storage of canned goods to control deterioration and rusting.

   Chemistry is making increasing contributions to quality control. One example is the potato sprout inhibitor. Potatoes sprayed with this

[4] Many of the following examples have been taken from the very excellent report, *Technology in Food Marketing*, USDA, Agricultural Monograph No. 14, 1952, especially ch. 4.

chemical when placed in storage will not sprout readily. Another example is the use of "modified atmosphere" wherein proportions of various gases are controlled in gas-tight rooms to retard deterioration.

Practices followed in preparing products for storage have an important effect on their storability. The deterioration rate of many products can be reduced if the temperature is reduced as soon after harvest as possible. The discovery that cuts and bruises received during harvesting reduce storage life has led to redesigning of machinery to reduce sharp edges and dropping distances. The proper farm use of insecticides and fungicides has reduced storage rotting which follows insect injury. The degree of ripeness at harvest has also been related to length of storage life. In grains, this has led to experimentation on various methods of quick drying immediately after harvest. It is not too great a dream to imagine that the combines of tomorrow will both harvest and flash dry the grain in one operation.

2. Reduction of the costs of the physical facilities used for storage. The most fruitful possibility here seems to be that of increasing the labor efficiency in handling through reorganization and additional mechanization. Often a by-product of such work is an increase in effective storage capacity of a given area.

The concept that storage is not static but is instead an integral part of the movement of goods has directed increasing attention toward handling problems of all types. Much of the work and expense of warehousing occurs during the unloading and loading operations. Attention to this idea of movement has led to the construction of one-story warehouses with ample loading facilities in contrast to the old multiple-story buildings. The use of pallet storage along with the fork-lift truck, conveyor systems, automatic dumping devices, and other mechanical devices is giving some storage operations a long-needed face lifting. One multiple-story warehouse originally handled a maximum of five trucks a day and 40,000 cases a month with a work force of fourteen. After redesigning and installing new equipment it could handle ten trucks a day and 50,000 cases a month with a work force of seven.[5] The same dramatic changes were accomplished when the design and methods of many grain elevators were changed.

Developments in ventilation and insulation are making both cold and general nonrefrigerated storage possible in the same space. New advances in the science of refrigeration are both reducing the cost and increasing the dependability of refrigerated storage. Study is underway on the problem of odor contamination of one product by another. If

[5] *Technology in Food Marketing, op. cit.*, p. 60.

odor controls can be worked out, commodities which now must be kept separated in different facilities may be stored together. This would greatly increase the flexibility of storage space.

3. Reduction of consumer resistance to storage products. Change here will come slowly and with difficulty. In many instances resistance rests upon prejudice instead of fact. In other cases, poor consumer acceptance has carried over from a past period when storage did result in a poorer quality product. With the increasing use of frozen food lockers and home freezers, many consumers are demonstrating to themselves that refrigeration and storage need not harm the product. The real problem in this area may be the resistance to change of many marketing and processing agencies and not of consumers themselves.
4. Changing the product or the pattern of production. Many of the real improvements in the storage problem can be classified here. Since part of the storage problem rests upon the production pattern, some of the cost reduction practices must be initiated on the farm or in the factory.

   In some commodities, such as eggs and hogs, production has gradually shifted to a more uniform year-round pattern. Such changes reduce the amount of storage needed. (For example, see the discussion on egg production changes in Chapter 17.) In other cases, product developments have changed the nature of storage operation. The rapid development of the frozen orange juice concentrate has shifted the emphasis from that of maintaining fresh fruit to that of properly maintaining the frozen product. If the experimentation with powdered orange juice produces a practical market product, the storage considerations will again be different. The trend toward more processed, table-ready meats has changed some of the meat storage requirements. The development of frozen and dried eggs in addition to shell eggs has increased the flexibility of egg storage operations. Some varieties of crops have been found to be better for storage than others.
5. Reduction of the speculation in the storage operation resulting from changes in the general level of prices. Perhaps this should not be listed here since its implications are much broader than that of reducing storage costs. This is part of the larger price policy question. Speculative implications are important in orderly storage. The amount and timing of this year's into-storage movement of many products often are affected by last year's profit experiences. The level of farm prices during these into-storage periods of the year may be particularly sensitive to the level of demand for storage. Therefore, this year's price experiences may carry over into next year. Though over the years storage must be done, this

does not prevent high risk and speculation from affecting a particular year's storage volume and its cost.

## STORAGE AND SEASONAL PRICE VARIATIONS

We have already discussed the relationship of the patterns of seasonal price variation to the basic seasonal patterns of production and the relative storability of different commodities (Chapter 8). The periods of high and low prices during the year are inversely related to the periods of high and low production. The amount of seasonal price rise from the seasonal low to the high period is theoretically just enough to cover the costs of carrying the desired amount of the commodity until the time when it is needed.

Basic seasonal price patterns can be affected, therefore, by changes in storage costs. Any changes which will reduce the costs of holding a commodity will tend to reduce the amount of seasonal price variation. This helps explain why a relatively new crop often has a greater amount of seasonal variation which declines as the years pass. In a new situation, storage facilities may be inadequate. Deterioration may be great. The trade channels may not be well organized. The costs of storage are therefore quite high. Then, as the situation improves, storage costs may decline. The seasonal price pattern then tends to become less pronounced. Such developments and their effects on the amount of seasonal price variation are, of course, not limited to new commodities. The price pattern of any commodity may be changed by changes in the storage situation.

CHAPTER FOURTEEN

# *Risk and the Futures Exchanges*

Our study of storage has demonstrated how difficult it is to isolate one of the marketing functions from others. The cost of holding goods, it will be recalled, really incorporates the costs of the storage function as well as costs related to the financing and risking functions. Now, we shall further consider the risk-bearing function in marketing along with a brief survey of an important specialized marketing institution, the futures exchange.

## TYPES OF MARKET RISK

Risk is inherent with the ownership of goods. And as with the other functions of marketing, risks must be borne by someone; they cannot be eliminated. Various kinds of risk may be classified as follows:[1]

1. Product destruction from natural hazards such as fire, wind and so on.
2. Product deterioration in value due to (a) quality deterioration; (b) price change largely because of change in consumer preference or acceptance, change in the supply situation, or change in general business conditions.

### *Product Destruction*

Those engaged in marketing must face the possibility that fire or other forces may suddenly damage or destroy the products they have on hand. A marketing firm, especially if it is a large one, may build up its own fund

[1] There is still another kind of risk inherent in the buying and selling of goods which perhaps should be mentioned here. There is always the risk that the buyer of goods may not be financially responsible. To overcome this risk many of our regulatory measures require registration and bonding of marketing personnel. There are special insurance companies which will guarantee a man's financial responsibility for a stated amount. Your author also acknowledges that many prefer to separate price uncertainty into a classification separate from risk. However, it is believed that it is more realistic to treat them together in the discussion of this area in marketing.

to cover such a possibility. However, as in the case of many individuals, firms may transfer this risk to an insurance company for a fee.

Insurance companies are specialized risk-bearers which spread the risk over a wide area and groups of people or businesses. Most marketing firms find buying insurance more economical than attempting to provide for their own protection. In the marketing of agricultural products, insurance companies of varying types are of considerable importance. These range from those insuring products in transit from farm to market to those insuring the inventory of the retail store.

*Product Deterioration in Value*

Every marketer runs the risk of deterioration of a product while he owns it. Aside from using the best technical equipment and knowledge available, there can be little transference of this risk. A rapid change in temperature, a breakdown in equipment, and the like are all possibilities which cannot be ignored. This is one of the factors which increases the marketing costs of perishables.

Risk from changes in consumers' preference or acceptance is greatest in the style goods lines. For example, women's dresses which may be high priced one year will bring much less the next, as they are "out of style." Of course, most food products are not faced with such rapid preference shifts. Food preferences usually change much more slowly over a longer period of time. However, price changes which occur because of large annual shifts in production and in the general price situation are common for agricultural products. A handler who purchased large amounts of eggs for storage in the spring at what he considered "safe prices" may find himself facing a highly unfavorable fall egg market because of an unforeseen deterioration in general business conditions. A well-timed frost may greatly increase the value of current apple storage holdings by sharply reducing the crop. A series of rains may make or break the wheat crop.

It is in the area of price change that agricultural marketing agencies probably face their greatest risk. Many devices are used to shift this risk from one person or firm to another. Products are often sold "in advance"; that is, the price is fixed in the present to deliver at a specified future date. Elevators sell grain f.o.b. at their elevator, and once the grain is loaded in cars on the railroad siding, their responsibility ceases. Vegetable canners often sell their packs immediately to other middlemen who specialize in taking the price risks on inventories. Most of these are devices for shifting risk from one agency to another within the same marketing channel. The principal method by which price risk may be shifted to those outside the marketing channel proper is that of hedging in a futures market.

## THE FUTURES MARKET

A major reason for the existence of futures markets is to provide a means for the shifting of the risk of price change. Fundamentally, futures exchanges provide the mechanics wherein trading can be done swiftly and economically in standardized promises to deliver or receive products at a specified time in the future. This organized market is complementary to the buying and selling of actual products on the cash, or spot, market.

### *Exchanges and Their Organization*

Throughout the country, organizations, generally known as exchanges or boards of trades, have organized to carry on futures trading in a wide variety of commodities. The members of these organizations buy and sell futures contracts under set rules which they have devised. Boards of trade or exchanges neither buy nor sell for their own account. They merely furnish the facilities for aiding the trading operations of their members. They obtain their income largely from assessments against their members and from charges made for various services performed, such as weighing and grading. In many instances, officials of the exchanges serve without pay. Futures markets are usually organized and operated in conjunction with cash markets so that the exchanges in reality preside over the operation of both markets.

Table 1 shows the commodities which are traded in futures markets under government supervision. Chicago is the most important futures grain market in the country. Other important grain futures trading centers are located in Minneapolis and Kansas City. New York is the leading futures cotton and futures wool market. (Boston is the leading cash wool market.) Both Chicago and New York are centers for butter and egg trading. The commodities in Table 1 do not make up a complete list of those with established futures markets. At some time or other, futures trading has been done in many other commodities such as coffee, cocoa beans, rubber, and silk. Trading in these other commodities, however, does not fall under federal supervision.

### *The Futures Contract*

The actual "commodity" which is bought or sold on a futures market is a contract. This contract is a promise to deliver or accept delivery of a specific grade of commodity at a specified time and place. No actual commodity ever changes hands until the contract comes "due." For example, trading in May wheat is the buying and selling of contractual agreements

TABLE 1. *Commodities Traded in Futures Markets under Federal Supervision, 1952*

| COMMODITY | UNIT | VOLUME OF TRADING | LOCATION OF LEADING MARKET | LOCATION OF OTHER TRADING MARKETS |
|---|---|---|---|---|
| Wheat | 1,000 bushels | 4,341,690 | Chicago | Kansas City, Milwaukee Seattle, Minneapolis |
| Corn | 1,000 bushels | 2,639,639 | Chicago | Kansas City, Milwaukee |
| Oats | 1,000 bushels | 2,239,205 | Chicago | Minneapolis, Milwaukee |
| Rye | 1,000 bushels | 426,587 | Chicago | Minneapolis, Milwaukee |
| Soybeans | 1,000 bushels | 2,953,180 | Chicago | ——— |
| Flaxseed | 1,000 bushels | 40,926 | Minneapolis | ——— |
| Grain sorghum | Million pounds | 8,634 | Kansas City | Chicago |
| Rice | 1,000 pounds | 320 | New York | ——— |
| Cotton | 1,000 bales | 94,887 | New York | Chicago, New Orleans |
| Butter | Carlot | 8,369 | Chicago | New York |
| Eggs | Carlot | 90,006 | Chicago | New York |
| Potatoes | Carlot | 18,181 | New York | Chicago |
| Cottonseed oil | 1,000 pounds | 7,989,720 | New York | New Orleans |
| Soybean oil | 1,000 pounds | 2,795,760 | Chicago | New York |
| Lard | 1,000 pounds | 1,223,880 | Chicago | ——— |
| Bran | Tons | 285,390 | Kansas City | ——— |
| Shorts | Tons | 161,280 | Kansas City | ——— |
| Cottonseed meal | Tons | 584,900 | Memphis | ——— |
| Soybean meal | Tons | 1,972,500 | Memphis | Chicago |

SOURCE: Report of the Administrator of the Commodity Exchange Authority, USDA, 1952.

to deliver or receive wheat in May; actual wheat will be involved only if the contract is allowed to mature in May.

Table 1 also gives the volume of trading which has occurred within a recent year. Over 4 billion bushels of wheat were bought and sold on the futures market compared to an actual crop of about 1.3 billion bushels. Nearly 3 billion bushels of soybeans were traded on the futures market compared to an actual crop of about 300 million bushels. Nearly 95 million bales of cotton were traded on the futures against an actual crop of about 15 million bales.

The natural question which arises is how one can trade more than there is. Again one must remember that trading on the futures markets is in terms of contracts, and such contracts involve actual commodities only when they are allowed to mature. In practice only an extremely small percentage of the contracts are permitted to come due. The usual situation is for a buyer of futures contracts to offset such a commitment with a sale of a similar contract before the contract matures. Under such circumstances the individual is *covered* as far as the exchange is concerned. The sale offsets the purchase and no actual commodity will be delivered. Until the

individual has covered he has an *open* contract—that is, he must either deliver or accept the commodity when the contract matures.[2]

As in any other business transaction, for every purchaser of a futures contract there must be a seller. By the nature of the contract, there cannot be more futures purchased than sold or vice versa. It then would be theoretically possible for all contracts to be canceled out by offsetting contracts before the due date of the contract. If this happened there would be no actual grain delivered to fulfill the futures contract.

*Relationship Between Cash and Futures Prices*

Fundamentally, cash and futures prices differ owing to location, time and quality factors, and random variations. The futures contract calls for delivery of a specified grade of commodity at a specified place or area and at a specified time. It follows, then, that cash grain prices throughout the country will not be identical with futures quotations. Since every futures contract when it matures calls for the actual commodity, the cash price for the specified grade at the specified place will be almost the same as the futures price at maturity.

Much of the difference between cash and futures quotations on a given market during the period prior to maturity will be due to the time factor. Theoretically at any given time during the life of the futures contract, the futures price will be above the cash price by the amount of the cost of holding the commodity. The longer the period before the contract matures, the greater will be the futures price premium over the current cash quotation. For example, in February the price of May futures wheat theoretically should be above the February cash wheat price by the cost of holding wheat from February until May. As May approached, this difference would narrow until it would nearly disappear when the futures contract matured during the latter part of May.

Because of this bridge of delivery which may always be crossed between the two markets, factors which affect price movements on one market also affect the price movements on the other. Theoretically, ignoring the differences of time, space, and quality, cash and futures markets should move

[2] Much of the confusion surrounding futures trading arises from the special terminology which has been developed. The use of many of these terms has "spilled over" into other markets. An example of this is the widespread use of the words "bullish" and "bearish" to describe market conditions. A bull is one who operates on the assumption of higher prices—a bullish market, therefore, is a strong and rising one. A bear is one who believes prices will be lower—a bearish market is a weak and falling one. For an excellent glossary of terms, see *Grain Market Reports* by L. W. Schruben, Kansas Bulletin 353, 1952. Also the brokerage firm, Merrill, Lynch, Pierce, Fenner and Beane, 70 Pine St., New York 5, offers free upon request several excellent pamphlets on various trading aspects. The various exchanges also usually have useful descriptive literature available upon request.

up and down together. The difference between cash and futures markets is called "basis." Both markets may move up and down reflecting a change in the actual or anticipated demand-and-supply situations while the basis remains unchanged. Actually, the two markets do not move up and down together perfectly. The futures market is appraising the situation as it *might*

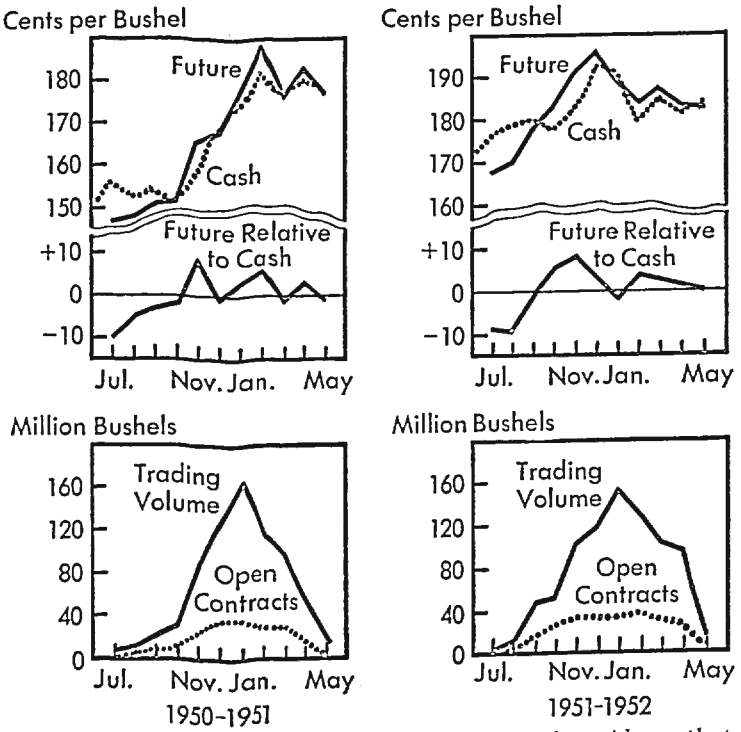


FIGURE 1. *Relationship between the mid-month price of the May futures contract and the monthly average of No. 3 yellow corn, volume of futures trading, and open contracts for the trading years 1950–1951 and 1951–1952, Chicago Board of Trade.*

develop—the cash market as it *is* developing. Differences in judgment may cause minor or severe short-run random variations to develop between the cash and futures market. In some instances, an inverse market in which the futures price is below the cash price may develop.

Figure 1 shows the quotations and trading volume of the 1951 and 1952 May futures contract for corn on the Chicago Board of Trade along with the average cash price of corn at Chicago throughout the trading period of each contract. The relationships here are only approximate, since only the mid-month futures quotations are plotted against the monthly

average for the cash prices. But we can check and see if the generalizations we have been discussing seem to apply. First, the futures and cash did move up and down together. In the 1951 contract period, the trend of both was upward; in the 1952 contract period, a downward trend developed after December. By October, the futures contracts had come closely in line with the cash market. Prior to this time the volume of trading in the May contracts was so limited that a representative market price was not really established. From October until the following May, the futures prices were generally above the cash prices. By mid-May the gap between the two quotations had closed, for the May contracts were soon to mature into actual grain.

The volume of trading reached its peak in January of both years when about 160 million bushels of May futures were traded. About this time *open* contracts also reached their peak of about 40 million bushels. From this time on, open interests covered themselves by offsetting their market positions. By mid-May less than 5 million bushels remained as open interests. If these had remained opened for a few days more, grain would have moved, in fulfillment of the contracts. This would have represented about 0.3 percent of some 726 million bushels of 1951 May wheat and about 0.6 percent of some 850 million bushels of 1952 May wheat which was traded during the life of the contracts.

*Hedging*

We pointed out earlier that the fundamental justification for the development of the futures markets is that it provides a means of transferring price risks. This risk transference is accomplished through a process called hedging.[3] In order to understand how hedging works we must keep in mind two things:

(1) The successful operation of hedging rests upon the assumption that futures and cash commodity prices move up and down together—that is, the *basis* remains unchanged.

(2) The mechanics of hedging is that of making simultaneous but opposite transactions on the futures and cash markets. That is, if cash wheat is purchased, future wheat is immediately sold and vice versa.

Let us look at a hypothetical illustration of a terminal elevator operator who purchased 100,000 bushels of wheat. He intended to store the grain and sell it later making money from his handling charges. He was

[3] The author is aware of the objections that are raised to the use of this type of hedging as typical; however, he still believes that it furnishes the most effective road for elementary understanding of the process. See Holbrook Working, "Futures Trading and Hedging," *American Economic Review*, June, 1953, pp. 314-343.

particularly interested in protecting himself from a fall in wheat prices which might quickly erase all of his potential margin. He decided to hedge. The hedging procedure was as follows:

| | CASH MARKET | FUTURES MARKET |
|---|---|---|
| (On day of cash purchase) | Bought 100,000 bushels @ $2.00 | Sold 100,000 bushel contract @ $2.10 |
| (On day of cash sale) | Sold 100,000 bushels @ $1.95 | Bought 100,000 bushel contracts @ $2.05 |
| | A loss of 5 cents a bushel on the cash transactions | A gain of 5 cents a bushel on the futures transactions |

When cash grain was purchased, futures were sold. When cash grain was sold, futures were purchased. The cash market declined, as he feared it might, and he lost 5 cents a bushel when he finally sold his grain. However, the futures market also fell, and there was a net gain of 5 cents a bushel on his futures transactions. This was a perfect hedge, since the loss on one market was exactly offset by the gain on the other. The elevator operator shifted his price decline risk into the futures market.

Let us follow through still another example—this time the case of a cotton merchant. This merchant purchased cotton from interior points. He was unable to make the immediate sale he desired, so he decided to hold the cotton in his warehouse. Later on he made his sale to a spinner. Since the merchant was afraid of a price decline he hedged as follows:

| | CASH MARKET | FUTURES MARKET |
|---|---|---|
| (On day of cash purchase) | Bought 1,000 bales @ 28.50 cents per pound | Sold 1,000 bale contracts @ 30.50 cents per pound |
| (On day of cash sale) | Sold 1,000 bales @ 31.00 cents per pound | Bought 1,000 bale contracts @ 32.50 cents per pound |
| | A gain of 2.5 cents a pound on the cash transactions | A loss of 2 cents a pound on the futures transactions |

This hedge was handled like the previous one of the elevator operator. However, in this instance the market rose and he gained 2.5 cents a pound from an increase in the cash cotton price. However, the futures market also rose, and he lost 2 cents a pound on these transactions. This hedging operation illustrates a very important point. A successful hedge not only protects the hedger against a price loss, but also prevents him from sharing in a price gain. Hedging is the process of shifting the risk from prices which change in *either* direction. This example also illustrates a hedge which is not perfect and as such is much more representative of the actual market. In this case, the cash and futures markets did not move up and down

together in the same amounts. The basis changed. Only 2 cents of the 2.5 cents was "shifted" into the futures market.

The student should now be able to think of many situations in which it would be desirable to shift price risk through hedging. The mechanics of simultaneous offsetting transactions should now be clear. Also, it should be apparent that the amount of price risk which is actually shifted depends upon how perfectly the cash and futures markets move up and down together.

*The Place of the Speculator*

When one recalls that the volume of trading in the futures is several times that of the volume of trading on the cash market, it is evident that all futures transactions are not made by hedgers. The volume of hedging will vary with the time of the year relative to the harvesting and handling of the crop. The volume of grain futures due to hedging transactions often runs below 10 percent of the total trading. The vast majority of the futures trading is done by speculators of one type or another. In all probability, referring again to the hedging example, the grain and cotton merchants bought and sold their futures contracts to speculators on the market.

Who are speculators? The best answer to that seems to be, "All kinds of people." Doctors, lawyers, businessmen, farmers, clerical and manual workers—all will be found speculating in futures markets. In addition to these people, there are professional speculators who make their living buying and selling on the futures market. All hope to make money. They are the people who are willing and happy to take the risk of price change for the hoped-for reward of gain. The speculators are the risk underwriters for the hedging process.

Many people believe that the speculator is an evil force in the market. While they may agree that benefits are derived from hedging, they wish to abolish the speculator. However, successful hedging is not possible without a large, active, speculative group. There must be someone willing to assume the risk, since risk-bearing as a marketing function cannot be eliminated.

*Commodities Adaptable for Futures Trading*

If the organization of coexistent cash and futures markets results in a more efficient marketing organization, why not expand such markets to other commodities? Throughout the history of these markets, commodities have been added or dropped from the trading lists. For example, a recent addition to futures trading has been grain sorghums. Back in the 1930's, several unsuccessful attempts were made to establish trading in frozen eggs. We have had futures trading in cocoa beans, but not in tea; rubber, but

not in petroleum, lumber, or steel. For successful trading, commodities must, in general, meet the following conditions:[4]

1. The commodity must be homogeneous and capable of adequate standardization. Commodities which, like steel, are tailored to individual uses, each with a different composition, cannot be used in establishing a standard contract. Goods which are highly dependent on style or brand preference for their value cannot be adequately standardized. Any commodity which is to be successfully traded must have a grading system which can be uniformly applied under careful supervision.
2. The commodity must be storable over some length of time. The reason here is obvious. The idea of futures delivery implies that one has the choice of selling now or of holding for later sale. The improvement of refrigeration has meant that many commodities are now storable which at one time were considered too perishable for trading.
3. Both supply and demand must be broad and uncertain and the movement of the goods to market unrestricted. The production of the commodity must be widespread enough so that an adequate volume will be available at all times. On the other side, the outlets for the commodity must be many and varied so that there is always a substantial group ready to buy. Restricted sources of supply or demand increase the possibility of monopolistic control with the consequent manipulation of available supplies and prices. The commodity must be free to move in response to price and not entwined with controls either by private enterprise or government. The future movements of price must be uncertain. Uncertainty is the life-blood of speculation. This is why programs of state trading on the international scene or domestic price control programs are not compatible with an active, freely functioning, futures market.

By noting the above three major conditions, one can usually ascertain why many products do not have futures market organizations. There are also some for which exchanges probably could be successfully established. Such exchanges are not established automatically or by law. If a commodity has the basic characteristics for a successful market, trade pressures develop for trying it out. Since no one is compelled to use such a market, its success depends upon whether potential users find the new futures market of value.

## THE FUTURES MARKET CONTROVERSY

The operation on futures exchanges permits the shifting of risk from price change from those handling and processing commodities to someone

[4] These have been adapted largely from those in *Commodity Exchanges and Futures Trading*, Julius B. Baer and Olin G. Saxon (New York, Harper & Brothers, 1949), ch. 6.

action was not sufficiently vigorous to offset the effect on prices.[7] Such effects were to be expected if the difference in size of traders was such as to create an imperfectly competitive or oligopolistic situation. In the early days of the exchanges, manipulations by large traders in attempting squeezes and corners did violently affect prices. It was public reaction to these situations which brought on the federal regulation of the exchanges.

*Effects on Marketing Costs*

The most obvious place where futures exchanges might affect marketing costs would be through the shifting of risk by hedging. If speculators are willing to assume this risk at lower costs than the marketing agencies handling and processing commodities, the costs will be reduced both to the users of the specific products and to society as a whole. It is very probable that speculators are in reality advancing low cost money for this price risk insurance.

Perfect hedges are probably the exception rather than the rule. However, cash and futures prices apparently do move close enough together so that there is less risk involved from attempting a hedge which is not perfect than not hedging at all. A study of the period, 1931 to 1941, found that the proportion of the risks from price changes that could have been offset by hedging in the futures averaged 64 percent for wheat, 44 percent for corn, and 49 percent for oats.[8] Though changes in basis were substantial, they were not so great as changes in the cash prices themselves.

Perhaps the best answer to the charge that hedging cannot successfully be done is that it is widely practiced by the trade. True, many studies show that local elevators do not hedge. They shift their price risk to other grain merchants and terminal elevators through the technique of advance sales. However, terminal elevator operators, cash merchants, and processors do hedge fairly consistently. One must conclude that they consider such operations beneficial or they would not continue them.

Other benefits may accrue to the marketing machinery from the operation of the futures exchanges. Generally speaking, financing costs are reduced as merchants may secure a higher percentage loan on their collateral if it is hedged. Futures markets also encourage a highly efficient information system. Market price quotations get rapid and wide dissemination. Supply-and-demand factors receive continual analysis. The machinery is set up for a uniform system of weighing, grading, inspection, and the settling of trade disputes. In fact, these by-products making for rapid, effi-

[7] C. Wright Hoffman, *Grain Prices and the Futures Market*, USDA Technical Bulletin 747, 1941, p. 59.

[8] Howell, *op. cit.*, p. 59.

cient trading may be fully as valuable as the hedging facilities themselves.

*Government Supervision of Exchanges*

Criticism of the futures market led to initial supervisory legislation in 1922. This was further amended in 1936 as the Commodity Exchange Act. The Commodity Exchange Authority (CEA) was established to carry out the provisions of the law. Certain commodities fall under the supervision of the Act along with the markets at which they are traded. (See Table 1.)

Generally, certain undesirable practices which had developed are prohibited. Commission merchants and brokers are required to register. Their books are subject to audit. Regulations to protect their customers are set up.

In addition to general supervision of the market operations, the CEA keeps a close supervision of daily trading so that illegal "corners" or "squeezes" may be prevented. The amount of trading which may be done by any one speculator is limited. Operations of large traders must be reported daily. The CEA has investigatory powers and may bring alleged violators to trial. For example, in 1952, the CEA investigated a charge of lard price manipulation, an attempted corner on eggs, and a complaint against a brokerage firm for illegal practices. Much of the regulation is left to the exchange organizations themselves. The Commodity Exchange Authority might be characterized as the public's policeman that encourages the exchanges to keep their own houses in order.[9]

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[9] For a summary of the CEA operations see USDA Leaflet 330, *Commodity Exchange Act and Commodity Exchange Authority.*

*Part III*

# COMMODITY AND INSTITUTIONAL PROBLEMS

The fact that much livestock in this country travels long distances before it is slaughtered complicates the handling of the shrink allowances under the proposed setup. In Indiana, for example, nearly three-fifths of the hogs sold at markets within the state were shipped alive for slaughter in other areas—principally in the eastern states. These hogs shrank nearly 8 percent of their purchased weight before slaughtering.[19] Situations of this nature would be difficult to handle.

*The Development of More Adequate Standards* [20]

Probably the contribution of the study of this problem will come about from the development of more objective and realistic grading standards for live animals. Through the pressure of the Packers and Stockyards Administration, many agencies have moved from a weight schedule selling basis to a merit basis. This, at least, attempts to focus the bargaining on the quality merits of the particular lot under consideration.

It has been established that weight, dressing percentage, and fat-back thickness account for a large percentage of the variation in hog carcass value. There is reason to believe that livestock salesmen and buyers trained to give attention to these factors instead of the more conventional standards can improve their live estimate of carcass value. New federal standards for grading live animals have attempted to reflect these factors. An improvement in the ability to judge accurately the live animals would, of course, accomplish many of the advantages of carcass grade selling without incurring the disadvantage of a change in selling methods.

The development of more widely accepted and objective federal meat grades presents a more complex problem. Though federal inspection is mandatory for a large portion of our meat supply, the use of federal meat grades is optional. A relatively small percentage of meat is federally graded. Most packers have evolved their own grading system which they use in preference to federal grades. Some of the major packers recognize over thirty different grades of beef. Only federal law or increased demands from consumers and retailers will secure the widespread acceptance of uniform federal grading. There is evidence that chain retail outlets are insisting more and more on their meat supplies being federally graded.

[19] J. R. Wiley, R. Wilson, and G. B. Wood, *The Eastern Market for Indiana Hogs*, Indiana Bulletin 569, 1951.

[20] For a discussion of the relative merit of several different ways of selling hogs see G. Engelman, A. Dowell, and R. Olsen, *Relative Accuracy of Pricing Butcher Hogs on Foot and by Carcass Weight and Grade*, Minnesota Bulletin 208, 1953.

else. Still, someone must bear this risk. Other commodities which do not have futures markets are efficiently marketed. There are alternative ways of organizing the risking function. Other countries, as they have moved to various kinds of public economic control, have shut down these markets. Today, with very limited exceptions, the United States is the only country which permits their operation.

Future markets in this country are periodically subjected to heavy criticism. Their critics have ranged from the uninformed man on the street to the President of the United States, who cannot be excused for being uninformed. In order to appraise this highly controversial market institution, let us examine the arguments.

*Arguments For and Against Futures Trading*

At one extreme, critics point to the greater volume of futures trading than the actual commodity to be traded and cry, "Fraud!" Others maintain that such markets are no more than a technique for organized gambling by speculators. At the opposite extreme are those who have blind faith in futures mechanism as the "last outpost of a free economy." Such arguments show the need for a better public understanding, but they do not raise any serious issue.

Arguments advanced by those more informed, however, have more substance. In general they centered around the effect of the exchanges on prices and marketing costs. Opponents charge that futures trading exaggerates price changes; that speculators manipulate the markets, and as a result the cash market is adversely affected. Defenders maintain that the futures mechanism gives stability to prices and furnishes a sensitive, realistic price base for the cash market. Critics point out that the relationship between the futures and cash markets is so imperfect that successful hedging is impracticable. To this the reply comes that it is hedging which reduces the cost of marketing by reducing the margins of commodity handlers.

Answers to these issues cannot be dogmatically given, for, after all, if the absolute truth were known there would not be much ground for controversy. However, we can point to the conclusions which have been made by researchers as indicating informed judgment on these issues.

*Effects on Prices*

There can be no doubt that the practice of basing cash prices upon futures is widespread throughout the grain trade. It does not necessarily follow, however, that futures prices therefore determine cash prices. They would not be used for establishing cash prices if they were not in funda-

mental agreement with the opinion of the buyers and sellers of grain as to the value of the commodity. The same body of underlying conditions affects both cash and futures, since the two markets are closely connected. To state categorically which of the two prices is causal would be like asking the tail to wag without the dog.

This is not to say that the operation of futures exchanges has no effect on prices. One of the real contributions of exchanges is the establishment of a sensitive price registration machinery. All kinds of news and statistics are focused on the trading floor. Here the information is interpreted by literally thousands of people through their trading actions. There can be no doubt that commodities with futures trading have continuous markets. There are always those who are willing to buy or sell at some price. Continuous markets, however, are also present for other commodities which do not have futures.

The net effect of futures trading on prices probably cannot be evaluated statistically. Some observers like to compare price habits of commodities traded on futures exchanges to those of commodities which are not. This is not a valid comparison, however, since the commodity with the futures organization often has better grading services, more uniform trading procedure, and more economic information available. Such improved trade conditions may be a result of futures trading but they cloud the effect on prices. Perhaps the best conclusion concerning price effects was advanced by Howell after his study of grain futures. He states:

> The data along with other available information indicate that futures trading usually tends to lessen the seasonal fluctuations of prices of grain and to reduce the extent of price changes from one season to another. But futures markets, by facilitating trading, no doubt increase the frequency of changes over relatively short periods.[5]

There is also some indication that very large speculators may have an influence on price movements. One study found that the great majority of small amateur speculators lost money in their speculative activities. This study concluded that if the sample was representative of small speculators there must have been other groups—large speculators, scalpers, spreaders, or hedgers—that made very large profits.[6] The actions of these very large speculators were directly correlated with price movements. That is, when they sold, prices fell, and when they brought, prices rose. Of course, other traders must have taken the opposite side of these contracts, but their

[5] L. D. Howell, *Analysis of Hedging and Other Operations in Grain Futures*, USDA Technical Bulletin 971, 1948, p. 65.

[6] Blair Stewart, *An Analysis of Speculative Trading in Grain Futures*, USDA Technical Bulletin 1001, 1949, p. 131.

CHAPTER SIXTEEN

# *Dairy Marketing*

## MILK PRODUCTION AND USE

### *Utilization*

The output of the dairy herd, milk, is usually sold as either whole milk or as cream. These may either be consumed as fluid milk or in the form of the several different manufactured products such as butter, cheese, condensed and evaporated milk, dried milk products, and ice cream.

TABLE 1. *Utilization of the Milk Supply, 1926–30 and 1946–50*

| MAJOR USES | PERCENT OF TOTAL SUPPLY | |
|---|---|---|
| | 1926–30 | 1946–50 |
| Fluid milk and cream | 42 | 48 |
| Butter | 43 | 27 |
| Cheese | 5 | 9 |
| Evaporated and condensed milk | 4 | 6 |
| Ice cream | 3 | 6 |
| Other uses * | 3 | 4 |
| Total | 100 | 100 |

* Includes dried milk (whole, skim, and cream), malted milk, dry ice cream mix, and other minor uses.

SOURCE: USDA, Bureau of Agricultural Economics.

The manner in which the total milk output is utilized is shown in Table 1. Nearly one-half of the total output is now consumed as fluid milk and cream. Butter production utilizes slightly over one-fourth of the output. Other uses account for the other one-fourth of the total supply. A comparison of the utilization pattern during 1926-1930 with that of 1946-1950 will show the large shifts which have taken place. The proportion going into

fluid milk has increased some. The amount used in cheeses, ice cream, and evaporated milk has increased sharply. The relative amount used in butter production, however, has declined sharply.

Table 2 shows changes in the per capita consumption of these various products. Even with increasing population, consumption per person of the various dairy products with the exception of butter has increased. The declining consumption of butter has been somewhat offset by increased margarine consumption. The consumption of margarine has increased from 2.5 pounds per person during 1926-1930 to 5.3 during 1946-1950.

TABLE 2. *Consumption of Selected Dairy Products, 1926–30 and 1946–50*

| PRODUCTS | POUNDS PER CAPITA | |
|---|---|---|
| | 1926–30 | 1946–50 |
| Fluid milk and cream | 349 | 395 |
| Butter | 18 | 10 |
| Cheese | 4 | 7 |
| Evaporated and condensed milk | 13 | 20 |
| Ice cream * | 23 | 46 |

* Net milk used.
SOURCE: USDA, Bureau of Agricultural Economics.

Milk which is used in various ways has different values. The highest prices can be paid for milk which is used for fluid consumption. Next in this scale of value is fluid cream and ice cream, Following this is the value of milk for use by condenseries. The lowest valued uses for milk are in the manufacture of cheese, dried milk, and butter—of these, dried milk and butter are probably at the botton. This hierarchy of use-values means that the demand for fluid milk will be satisfied first from the available supplies. Usually all other uses for milk will be satisfied before milk is diverted into butter and dried milk production. Butter manufacturing, other things being equal, stands nearly last in the line of users of milk. It is within this framework of different values that a good deal of the decline in butter manufacture and consumption can be explained. The increasing demand for the other dairy products, which has come about through population growth, rising standards of living and an increased consciousness of the value of milk as food, has meant that an ever-increasing proportion of the total milk supply is needed to fulfill these demands. Less has been left for butter manufacture, and into this gap have stepped the spreads manufactured largely from vegetable oils.

*The Production of Milk*

Milk which is to be consumed in its fluid form is a relatively perishable and bulky product. The distance which it can be shipped is limited. Manufactured dairy products, on the other hand, are relatively less perishable and of various degrees of bulkiness. This means that they can be produced at points farther away from the consuming centers. The geography of milk production has often been described as a series of concentric circles surrounding the consumption center. Fluid milk and ice cream will be produced within the nearest circle, condensed milk in the next, cheese in the next, and butter in the areas most distant from the consuming center. This pattern in the actual world, of course, is not as clear-cut as this. However, milk for fluid consumption is usually produced within rather limited areas, called milk sheds, surrounding our large cities. Wisconsin is a leading cheese producing state; Minnesota, located somewhat farther from the consuming centers, is a leading butter producing state.

TABLE 3. *Regional Distribution of Milk and Production and Methods of Sales, 1924 and 1949*

| REGION | MILK PRODUCED ON FARMS | | WHOLE MILK SOLD BY FARMERS TO PLANTS & DEALERS | | CREAM SOLD BY FARMERS TO PLANTS & DEALERS | |
|---|---|---|---|---|---|---|
| | 1924 | 1949 | 1924 | 1949 | 1924 | 1949 |
| | % OF TOTAL | | % OF TOTAL | | % OF TOTAL | |
| North Atlantic | 18 | 17 | 38 | 23 | 4 | 1 |
| East North Central | 28 | 30 | 40 | 39 | 29 | 15 |
| West North Central | 25 | 22 | 5 | 12 | 46 | 64 |
| South Atlantic | 6 | 7 | 4 | 5 | 1 | 2 |
| South Central | 12 | 13 | 3 | 8 | 6 | 11 |
| West | 11 | 11 | 10 | 13 | 14 | 7 |
| United States | 100 | 100 | 100 | 100 | 100 | 100 |

SOURCE: *Changes in the Dairy Industry*, Bureau of Agricultural Economics statement submitted to public hearings before Senate Subcommittee on Agriculture and Forestry, 81st Congress, 2nd Session; data taken from Tables 31, 32, and 34.

Over half of the total milk production of the country comes from the North Central region. The North Atlantic region is also a large producer. The other regions of the country, while still relatively small in production, are increasing their relative output (Table 3).[1] This table also illustrates

[1] The picture of the growing dairy industry of the South is well presented in the Southern Cooperative Series, Bulletin No. 19, *Trends in the Production and Disposition of Milk and the Importance of Dairying in the South, 1924–50*, 1951.

the geographic utilization differences. The bulk of the milk of the heavily populated eastern areas is sold as whole milk to cities for fluid consumption. Nearly two-thirds of the cream sold comes from the farmers in the western part of the North Central region, which is a heavy butter producing area. During the twenty-five year period presented here, the total production of milk has increased by one-third, the cream sales have decreased by almost one-third, while the whole milk sales have increased tremendously.

As the output of the dairy herds and the utilization of this output for fluid consumption has increased, there has been a marked trend toward specialization of the dairy farms. There are now actually fewer dairy herds than there were twenty years ago. The number of large commercial herds has increased, while the number of the smaller "side-line" herds has decreased. In 1929, slightly over half of the total milk production came from herds of nine cows or less and only about 18 percent came from herds of twenty cows or more. In 1944, about 38 percent of the total production came from these smaller herds while nearly 30 percent came from the larger herds (Table 4). In 1925, 26 percent of the total milk production was used on the farm and only 29 percent was sold as fluid milk. In 1949, 17 percent was used on the farm and 61 percent was sold in fluid form.

TABLE 4. *Changes in the Herd Production Pattern of Milk, 1929 and 1944*

| SIZE OF MILKING HERD (NUMBER OF COWS) | NUMBER OF HERDS | | MILK PRODUCTION | |
|---|---|---|---|---|
| | 1924 | 1944 | 1924 | 1944 |
| | % OF TOTAL | | % OF TOTAL | |
| 1 to 2 | 49 | 52 | 13 | 11 |
| 3 to 9 | 38 | 32 | 39 | 28 |
| 10 to 19 | 10 | 12 | 30 | 31 |
| 20 to 29 | 2 | 3 | 9 | 14 |
| 30 or more | 1 | 1 | 9 | 16 |
| Total | 100 | 100 | 100 | 100 |

SOURCE: Data from Census of Agriculture.

Production efficiency has also increased. From an average of 4,494 pounds of milk per cow during 1926–1930, production had increased to an average of 5,092 pounds during 1946–1950. These trends to fewer, more productive, but larger herds along with increased emphasis on the sale of whole milk illustrates an industry in transition. This means increasing con-

cern with dairy marketing problems as the producers are becoming more and more specialized.[2]

## COUNTRY ASSEMBLY OF MILK AND CREAM

Regardless of whether farmers sell their output as fluid milk or cream, the problems involved in country collection are similar. Milk is usually assembled by trucks operating over set routes which pick up the milk from the farm and deliver it to the milk plant. In some instances where the production area for a given market is extremely large, the milk may be first collected and delivered to country milk plants. Here it is cooled and then put in large tank trucks for the final move to the city. Generally, the farmer is charged a flat rate per hundredweight for hauling regardless of distance or amount hauled.

The organization and efficiencies of these routes vary widely. In some instances trucks must travel long distances to pick up relatively small volumes of milk. One study found that routes averaged eighty-three miles and served forty-three producers. The average pickup was ninety-two pounds—or approximately ten gallons of milk. One road was covered by four trucks —any one of which could have handled all the milk. Special lengthy side trips were often made to pick up the milk of one producer.[3]

Seasonal production patterns also contribute to the inefficiency of milk assembly. In some areas, the spring peak load is two-thirds above the fall-winter load. Usually this results in trucks hauling loads well under capacity during long periods of the year. Considerable savings could be made in many instances through the combination of routes in periods of low production and the addition of supplemental routes during periods of high production.

The costs of handling the milk of each producer on a route are not the same. The load hauled per patron and the length of travel are both factors influencing cost. It costs almost as much to pick up one can of milk as it does ten. One student of this problem suggested that a flat charge per month plus a hundredweight charge would be more equitable. He pointed out that a charge of $2.00 per month per patron and a 30-cent per hundredweight charge would be more equitable than the 35-40-cent flat charge then

[2] This and a wealth of other data on the changing dairy industry can be found in the hearing before a subcommittee of the Senate Committee on Agriculture and Forestry, 81st Congress, 2nd Session, entitled *Changes in the Dairy Industry, United States, 1920–50*, a statement prepared by the Bureau of Agricultural Economics, USDA, and available as a reprint from *Utilization of Farm Crops*, Part 4, Appendix A.

[3] E. H. Matzen, *A Survey of Country Milk Collection Routes in the Fort Wayne Area of Indiana*, Indiana Bulletin 520, 1947, and C. D. Phillips, *Collection of Milk and Cream from Farms in Kentucky*, Kentucky Bulletin 479, 1945.

in existence. This scheme would have raised the effective hauling charge of the small shipper and lowered that of the large shipper, thus being much more in line with the actual costs of milk pickup.[4]

It would appear that much improvement could be made in the assembly of milk from farms to plants. Small routes could be consolidated. Route arrangements could be changed to avoid duplication and to help offset the seasonal variation in the loads hauled. A method of more equitable charges could be evolved.

However, as is so often the case, an entirely new approach to the problem may solve many of the difficulties. A new method of milk assembly is now being tried. In this method, the milk is delivered directly from the milking machine into large, sterile, cooled tanks. Large tank trucks then periodically pump the milk directly from these farm tanks and deliver it to the plant. This eliminates the laborious loading and unloading of individual milk cans at the farm and also emptying them at the plant. It also has been possible by this method to let a larger supply of milk accumulate at the farms and eliminate the daily pickup of small amounts. The end product of such a development may be not only a reduced cost of milk assembly but also a higher quality product.

## FLUID MILK

### *Nature of the Product and Its Market*

A knowledge of fluid milk and its market characteristics is an aid in understanding many of the marketing problems which have developed. One of these characteristics is that milk is usually considered a necessary food. Not only is it necessary, but it is of such nature that under careless handling it is a carrier of disease and can become a real threat to health. The public interest in its milk supply is great. Most municipalities have evolved more or less elaborate regulations which affect the production, handling, and distribution of its milk. Such intense public interest and the resultant regulations set fluid milk apart from many other agricultural products.

A second characteristic concerns the nature of the supply and distribution of fluid milk. Milk is a perishable and bulky product. Even though modern transportation permits the transportation of milk for long distances, the large bulk of the supply for a city must come from the surrounding area. Therefore, producers in a given milkshed could have near-monopoly control over the milk supply if they were to organize together to control its production.

[4] N. T. Pritchard and W. H. Cope, *Milk Assembly in the Fort Wayne Milkshed*, Indiana Bulletin 559, 1951.

The pasteurizing and bottling of milk are operations which require large investments in machinery, but little hand labor. With fixed costs making up such a large share of the total cost, the economies of scale in these operations are considerable.[5] Under these circumstances, a few companies do a large share of the business in a given milk market. For example, out of the seventeen pasteurizing plants operating in Minneapolis, in 1950, nearly 75 percent of the total sales were made by the five largest

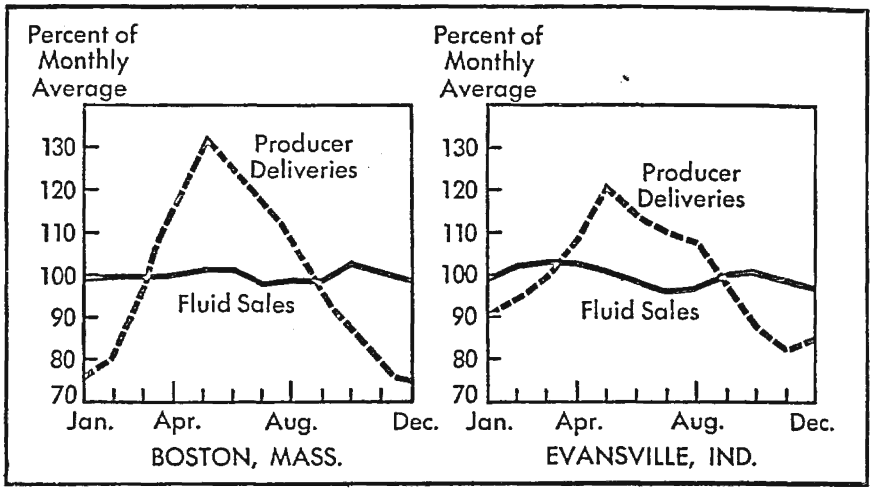



FIGURE 1. *Seasonal pattern of producer milk deliveries and fluid milk sales in two markets.*

plants.[6] In 1949, of the forty-one fluid milk distributors in Portland, Oregon, the six largest handled more than one-half of the total supply.[7] Of the eighteen distributors in Indianapolis, Indiana, in 1949, nearly 72 percent of the sales were made by the six largest firms.[8] Such situations as these can be duplicated in almost any market of size. Therefore, the situation is one of monopolistic possibilities of supply on the one hand and oligopolistic possibilities of distribution on the other. The rules of the competitive game will not apply fully to such a situation.

A third distinguishing characteristic is that of a variable seasonal pattern of supply and a stable seasonal pattern of fluid demand. Figure 1 shows the supply and fluid milk utilization picture of two widely separated mar-

[5] Charles B. Howe, *Marketing Margins and Costs for Dairy Products*, USDA Technical Bulletin 936, 1946.

[6] Alexander Swantz, *Economic Effects of Federal Regulation of the Minneapolis-St. Paul Fluid Milk Market*, USDA Marketing Research Report 11, 1952.

[7] G. E. Korzan, A. B. Davis, and D. D. MacPherson, *Costs of Distributing Milk in the Portland Market*, Oregon Bulletin 510, 1952.

[8] N. T. Pritchard, *The Indianapolis Milk Market*, Indiana Bulletin 554, 1950.

kets. In both of these markets, fluid milk sales varied little from month to month. On the other hand, the supply of milk varied widely from its low in the winter months to its peak in the early summer months. This situation means that if a city is to have enough milk for consumption during the winter, it must establish a supply which will give it a large surplus in the summer months. In the winter months, then, a high portion of the supply will be used for the relatively high-priced use of fluid consumption. However, during the summer, a much smaller portion will go for this purpose while the remainder must be used for condensed milk, cheese, butter, and the like —outlets which will pay lower prices. The producer usually finds it more costly to meet the requirements of producing milk for fluid consumption. Yet much of this same milk will go into the lower paying uses during part of the year. This situation focuses attention on the problem of pricing milk so that producers will maintain an adequate year-round supply for the milk market.

Under the conditions of perfect competition which have been outlined in Chapter 6, the price paid for milk would be uniform regardless of whether its intended use was for fluid milk or the lower valued milk products. One seller would always offer his milk to the highest bidder and one purchaser would always buy milk from the lowest priced supplier if neither buyer nor seller had any control over the price. That perfect competition is far from being the actual case in milk marketing should now be obvious. The monopolistic element is a major factor in milk price determination.

As we pointed out in Chapter 9 in our discussion of price discrimination where market orders exist, the gain to be derived from such discrimination depends on two factors. First, prices must be administratively established rather than dependent upon impersonal determination, and secondly, it must be possible to segment the over-all market into a number of submarkets for which a price can be established. Both of these factors can be present in milk price determination.

Basically, it will be recalled, price is controlled by influencing either the quantity offered on a market or by influencing the demand for the product. An industry in which the monopoly element is as important as it is in the milk industry is one in which the quantity of each subproduct is adjusted to give greater net returns than would otherwise be the case. The rule followed is to adjust the quantity so that the addition to net revenue will be the same in each submarket.

For fluid milk for human consumption the demand is highly inelastic at current price ranges. As a consequence, additional milk would depress prices so much that net returns would not increase. The processor, therefore, diverts milk into manufactured products which will bring a lower

price but whose demand is more elastic. In these outlets net revenue will not fall as additional quantities are offered.

This division of the total supply among many uses would take place in this fashion even if milk were purchased at a uniform price. The pricing procedures outlined below merely represent an attempt of producers to share in the returns that processors might receive from such price-discriminatory procedures.

*Pricing and Market Regulation*

In most of the larger markets, producers have formed cooperative bargaining and marketing associations in an attempt to offset the market power of the few large distributors. Some markets may have only one cooperative milk producers' association; others may have two or more. Though they may differ in detail, all—on the surface at least—perform the same general service. The principal purpose of these associations is to act as the farmer's bargaining agent in establishing milk prices. In addition, many associations own laboratory facilities with which they can perform butterfat tests and thereby check this all-important factor against the tests run by the distributor-buyers. Some associations also make a practice of checking the weights which were taken by the buyers. Some operate pickup routes, and others own processing facilities for handling the surplus milk. These operations are largely financed through deductions from the milk checks of members.

Dealers, too, in many markets have banded together in associations. Such organizations are largely for the purpose of presenting a united front to the producer cooperatives in bargaining over the price of milk.

The third major party in most milk markets is the municipal and state authorities. These authorities regulate the conditions which must be met in producing milk for human consumption. These regulations vary widely from market to market. Either by intent or accident, such regulations often act more as an effective method of controlling the supply of milk than as an objective standard for judging the fitness of the supply. (See again Table 4, Chapter 10, as an illustration of the variability which exists in quality standards.)

Sometimes these three agencies working in harmony achieved a peaceful and well-run market. At other times, however, marketing conditions were turbulent indeed. The game of power against power sometimes resulted in producers' strikes in which milk was poured down sewers and violence flamed. Distributors were accused of collusion in order to force prices down and to achieve a more complete control of the market. As an answer to a rather unsatisfactory situation, the federal milk marketing

orders and agreements were born in the mid-1930's. (For the background of these provisions see again Chapter 9 on government price and marketing programs.)

The stated purpose of the marketing order is to stabilize prices and to assure an ample and continuing supply of milk. In markets under federal regulation, a milk market administrator acts as the referee and policeman of the market. Formulas are established for pricing milk to replace much of the bargaining between producers and distributors.

Since 1936, more and more markets have asked for and received the supervision of federal marketing orders. It was estimated in 1953 that the pricing of over one-half of the fluid milk and cream consumption was affected directly by the forty-nine urban markets then operating with federal orders.[9]

The procedure for obtaining a marketing order for a given city may be outlined as follows:

1. A petition is made to the Secretary of Agriculture to initiate the proceedings for establishing the order. This step is usually taken by the cooperative association representing the producers in the area.
2. Investigation is undertaken by the Secretary to determine whether further action should be taken.
3. A public hearing is called, at which time the proposed order is presented. All interested parties may present their opinions at this hearing.
4. Based on the facts and opinions presented at the hearing, an order is issued. Time is then allowed for objections to be filed. Changes may be made in the order after reviewing such objections.
5. The order is issued and becomes effective after a referendum in which two-thirds of the producers vote in favor of the proposed order.

Basically, steps 3, 4, and 5 are followed in making any change in an order. At the hearing all groups can be heard. Expert witnesses may be called. Consumers' groups may appear, as well as representatives of producers and dealers. Anytime 50 percent of the involved producers so desire, the order may be terminated. The dealers, even though they may not approve of the provisions of the marketing order, have no choice but to follow its provisions once the producers have given their consent.

Though the provisions of the typical milk marketing order cover a wide variety of factors, the most important provisions are those which are concerned with the pricing of milk. The paying price to producers usually is based on the so-called *blend* price. In obtaining the blend price, the milk

[9] "Role of Government in Pricing Fluid Milk in the United States," *Dairy Situation*, USDA, April, 1954.

is divided into two or more *classes* according to its utilization. Class I is the usual designation given to the milk which is used for fluid distribution. Other classes are established to identify the milk which is utilized in the various other manufactured milk products. Each of these classes has a different price which attempts to reflect the value of the milk in line with the products obtained. The proportion of the total supply which goes into the various classes is valued at its particular class price and the blend price is the result.

For example, suppose that 70 percent of the total milk supply for a given period is used as Class I (for fluid consumption) and is priced at $5.00 a hundredweight. The remaining 30 percent is used for manufacturing purposes (in this case designated as Class II) and is priced at $4.00 a hundredweight. The blend price will be calculated as follows:

| | |
|---|---|
| 70 percent × $5.00 | = $3.50 |
| 30 percent × $4.00 | = 1.20 |
| 100 percent (blend price) | = $4.70 |

This price of $4.70 will be the basic price for milk of a given butterfat content to be used in paying producers. Some producers will receive slightly more and some less depending upon whether their butterfat test is above or below the standard requirement. This price reflects the way in which the total supply is used in the market, and no individual producer will gain or lose because his particular milk is utilized differently. The justification of the same basic price to all producers rests upon the fact that individual producers have little control over the use made of their own milk.

The real problem in the above example, however, is that of determining the prices of the various classes of milk. Why should the price of Class I milk be $5.00 (in the above example) and of Class II milk be $4.00? Almost all federally supervised markets have adopted formulas by which these prices are determined. Such a formula, once determined, is used automatically until it is changed. The large majority of formulas in use are based upon the prices of butter, cheese, powdered milk, and condensed milk. Ususally two or more alternative formulas are provided for establishing the price of milk used for manufacturing. The formula which results in the highest price is used. In this way, the city meets the highest available manufacturing competition for its milk supply. To this price for the manufacturing uses, fixed premiums are added to obtain the price of Class I milk. In the above example, the highest price calculated from the various formulas in use is $4.00. This becomes the price paid for milk used in manufacturing. To this, a $1.00 premium is added to obtain the price of the milk used for fluid consumption.

From this brief explanation, it will be seen that two things might have caused the blend price of $4.70 to be different. The prices of butter, cheese, condensed milk, or other formula factors might have caused a change in the price of the basic milk class. In addition, if the way in which the supply was utilized had been different, the blend price would have been different.[10]

One of the objectives of pricing in a given market is to encourage a more uniform seasonal pattern of milk production. A widely used technique for this purpose is to vary the premium given for Class I milk. A greater premium is offered in the winter months than during the heavy production months of the summer. Assuming that the above illustration represents the calculation for December, the premium added to the base price in June may be only 50 cents. In this way, two forces work for a higher blend price in the winter months than in the summer months. The premium for Class I milk will be higher. Also, the proportion of the total supply used as Class I milk will be higher in the winter than in the summer months (see Figure 1). Such a seasonal factor in prices is used to encourage a more even, year-round production.

Many markets have not found this method adequate to cope with the problem of excess milk in the summer months. These have evolved still other systems of giving incentives for winter production. One such system is the base-surplus plan. Under one form of this plan, each producer has a quota for his milk production. If the producer fails to deliver his quota during the winter months, or delivers more than his quota during the summer months, he is penalized. Such a system coupled with the seasonal fluctuations in the blend price obtained from the premium and utilization changes offers a still stronger incentive for a more uniform production.[11]

Hearings are usually in progress at some market in the United States at any particular time. These hearings may consider any of the provisions of the marketing order, but usually they center around pricing problems. Most markets have not solved the problem of the large variations in seasonal production. Part of this problem is that of securing as much fluid (Class I) consumption as possible. Most studies have found that the de-

[10] The pricing details of the different markets vary. The method used in calculating the prices of a particular market can be found in the market orders which may be obtained from the market administrator. Many studies have been made by the Production and Marketing Administration of the USDA of the operation of the orders of different cities. A general study giving the broad picture of the operation and problems of formula pricing is *Formula Pricing of Milk for Fluid Use* by E. S. Harris and I. R. Hedges, USDA, Farm Credit Administration, 1948.

[11] Effectiveness of this and other schemes has also been studied in several markets. These reports are also available from the USDA, Production and Marketing Administration.

mand for fluid milk is inelastic.[12] However, it seems possible that many markets have reduced the returns from Class I sales through unwise pricing practices. The flexibility of the wholesale pricing mechanism is the principal concern of milk market regulation, since usually the retail resale prices are not controlled by the marketing orders.[13]

The search for the proper pricing formula has led to some departures from dependence upon the prices of manufactured products in establishing the base price. The Boston formula illustrates an alternative approach toward establishing prices. Formulas which follow the Boston pattern attempt to include several measures of both the supply-and-demand situation and have divorced themselves from direct connection with butter, cheese, and other milk product prices. In this type of formula, the United States general wholesale price index, wholesale food price index, and index of department store sales may be included as measures of the level of demand. Data which measure the cost of milk production are included as indications of supply conditions.

Whether such formulas are preferable must be answered by the future. It is also increasingly evident that the butterfat content of milk is not necessarily a true indicator of its value. The future will no doubt see increased efforts to price milk on a nonfat basis. It seems probable that dependence upon the prices of manufactured products as the sole factors in fluid milk formula pricing will decline. With increasing amounts of milk being used for fluid distribution, basing its price upon the value of manufactured products and butterfat content may be just a bit like asking the tail to wag the dog.

*Fluid Milk Distribution*

There are two principal avenues for getting milk from the distributing plant to the ultimate consumer. One is direct delivery to the consumer's doorstep. The other is wholesale routes which deliver milk to retail grocery stores where it is then sold to the consumer.

Almost every study of the cost of marketing fluid milk has concluded that nearly one-half to two-thirds of the total cost occurs between the time the pasteurized and bottled milk is available at the door of the milk plant until it is delivered into the hands of consumers. It has been found that it costs the same amount, for all practical purposes, to deliver one quart to

[12] *What Makes the Market for Dairy Products?* North Central Regional Publication 10, Wisconsin Bulletin 477, 1948.

[13] A few states and cities have extended their regulatory measures to the supervision of dealers' margins and retail sales prices. For an explanation of one such set of regulations see Maynard C. Conner, *The Milk Market Control Law in Virginia*, Virginia Bulletin 444, 1951.

the consumer as it does to deliver six. It also probably costs more to deliver directly to the consumer than it does to deliver the milk in wholesale quantities to the retailer.[14]

The frequency of delivery and the arrangements of routes also have a direct bearing on the costs of distribution. Prior to World War II, daily delivery was the common practice. This practice, of course, reduced the amount of milk delivered each day per customer. With the modern home refrigeration and the improved control of milk quality, milk can be satisfactorily kept by the housewife for several days. As one of the measures to conserve scarce rubber supplies during the war, milk delivery was reduced from each day to every other day. This practice has remained in widespread use even though governmental restrictions were lifted. Overlapping and inefficient organization of routes of the several companies serving a city are very similar to that of the routes assembling milk from the country producer. Some routes are long and have small volumes. Overlapping is frequent. Students of the problem have stressed the necessity of increasing the density of deliveries in relation to the length of the route as a method of reducing the unit costs of milk delivery.

TABLE 5. *Differences between Retail Prices of Milk Delivered to Homes and Sold in Stores, 89 Cities, United States, 1949*

| POPULATION OF MARKET CITY | NUMBER OF MARKETS | | AVERAGE AMOUNT DELIVERED PRICES WERE ABOVE STORE PRICES WHERE DIFFERENTIAL EXISTED |
|---|---|---|---|
| | WITH NO STORE DIFFERENTIAL | WITH STORE DIFFERENTIAL | |
| | | | CENTS PER QUARTS |
| 0– 99,999 | 26 | 3 | .4 |
| 100,000–299,999 | 15 | 14 | .9 |
| 300,000 and over | 9 | 22 | 1.2 |
| All markets | 50 | 39 | 1.0 |

SOURCE: Louis F. Herman and Mordecai Baill, *Farm to Retail Margins for Fluid Milk*, USDA, Bureau of Agricultural Economics, processed, 1951.

It may be concluded that it is less costly to deliver milk in larger quantities and less frequently. And probably it is also less costly to distribute milk through the retail stores if the consumer convenience consid-

[14] For an excellent analysis of these costs, see *An Analysis of the Spread Between Farm and Consumer Milk Prices in New York City Under Present Practices*, Part 1 of the Annual Report of the New York State Temporary Commission of Agriculture, 1949.

erations are ignored. It would follow, then, if costs are to be reduced, that consumers should be encouraged either to take their milk less often and in larger amounts or to pick it up at their grocery stores. However, many cities have uniform prices regardless of how much or where the milk is purchased. Some have small discounts for retail and quantity purchases. Some have a completely illogical pricing system from the standpoint of cost. One study found that some store prices were actually 5 to 8 cents a quart higher than home deliveries.[15] Table 5 shows the situation which existed in eighty-nine markets in 1949. These data indicate that there is very little price incentive to encourage store purchases.

Part of this "cost irrationality" in milk pricing can be explained by the nature of the competition in the sale of milk. Regardless of the company from which milk is purchased, the quality is standardized in order to meet the health requirements of the municipality. The dominance of a few firms with heavy capital investments makes price competition highly undesirable from the viewpoint of the individual firms. Such a situation furnishes the ideal atmosphere for nonprice service competition. Most milk companies consider their salesman and the services he renders their most active competitive factor. Under these conditions, from the company's viewpoint, it may be desirable to encourage the home delivery of milk since there are no such service factors present in the refrigerator case at the grocery store. In this environment, poor and duplicative route arrangements grow as different companies search for more customers. In addition, pressure to maintain frequent deliveries in order to keep in contact with the customer is substantial. Many companies have chosen to operate with minimum price differentials with the result that the consumer who buys large quantities at the grocery store usually subsidizes the consumer who has her milk delivered often and in small amounts. In spite of these competitive handicaps, there is a marked trend in many markets toward increased store sales. The growing popularity of the paper container has helped in that it is no longer necessary to return bottles. There also is evidence of an increasing use of half-gallon containers.

The development of paper containers has also made it possible for large city companies to expand their sales into small surrounding towns. Originally many towns and small cities were served by small dairies which had a substantial degree of local monopoly power. Recent years have seen a great many of such dairies fail, as larger dairies with their paper-contained

[15] William J. J. Smith, "Milk Price Differentials in the Southeast," *Journal of Farm Economics*, August, 1946.

milk, have invaded these markets. Here is an excellent example of the dynamic nature of the market structure. The innovation of paper containers has, no doubt, encouraged the further growth of already giant concerns. On the other hand, many small communities which before had only one source of milk may find two or three of these outside giants competing for their favor. It is not easy to judge whether such development has increased or decreased the competitive nature of the total milk picture.

## MILK USED FOR MANUFACTURED PRODUCTS

Manufactured dairy products, in general, differ from fluid milk in that they are less bulky and less perishable. This gives them greater flexibility in transportation and storage. It also gives rise to the application of large-scale industrial production techniques to their manufacture and of extensive branding and merchandising programs to their marketing.

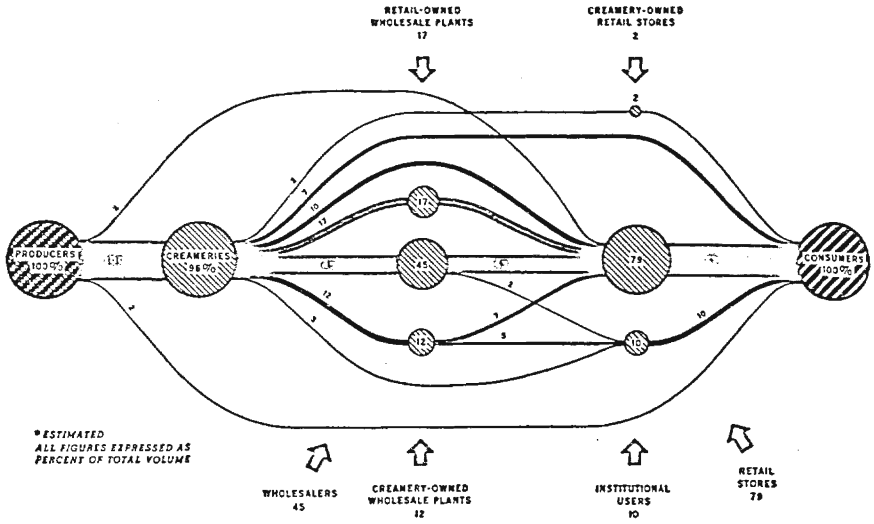
### *Marketing Structure*

Figure 2 shows the marketing channels which are used for butter, cheese, and condensed milk. The principal channels used in marketing butter is from the creamery to the wholesaler to the retailer. Cheese moves from the local factories to country assemblers and processors, then to large wholesalers to the retail store. Evaporated milk moves from the factories to wholesalers, which may either be independent or factory-owned, and then to the various retail outlets.

Though these channels appear rather simple, they are the result of a significant change in the marketing structure which has occurred during the last twenty-five years. At the time of World War I, the marketing of butter was dominated by the independent wholesaler and jobber. Nearly half of the cheese also was moved to terminal market cheese wholesalers, then to wholesale grocers, and finally to retailers. The large meat packers were major distributors handling about 30 percent of the butter and about 48 percent of the cheese.

During the 1920's and 1930's, there was a rapid growth of the chain store system, large cooperative marketing organizations, and large diversified dairy products companies. These developments encouraged more direct marketing channels. Independent wholesalers and jobbers were by-passed more and more. Both chains and packers secured their supplies directly from plants in the production area. The cooperative marketing associations and the large dairy product corporations owned country plant facilities and

MARKETING CHANNELS FOR BUTTER, UNITED STATES, 1939*




MARKETING CHANNELS FOR AMERICAN CHEESE, UNITED STATES, 1939*

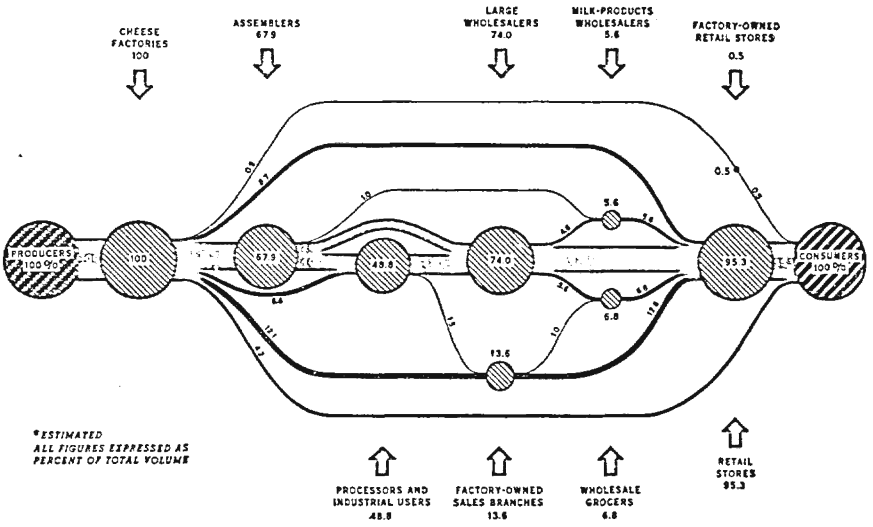
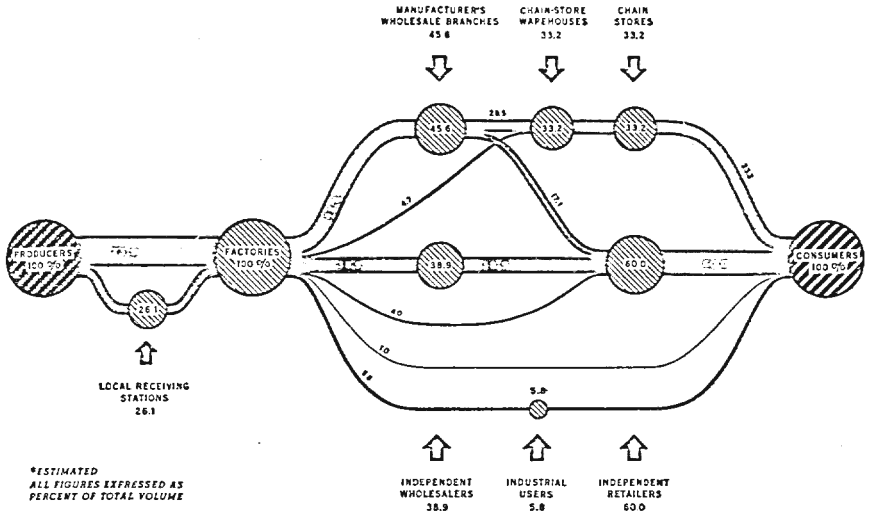



FIGURE 2. *Marketing channels for butter and cheese (above) and for evaporated milk (on facing page). (Courtesy USDA.)*

MARKETING CHANNELS FOR EVAPORATED MILK, UNITED STATES, 1939*




established their own contacts with the large retailers.[16] In the late 1930's, it was estimated that the three leading firms of each industry did 21 percent of the butter business, 63 percent of the cheese business, and 44 percent of the condensed milk business. Chain stores also were major owners of production facilities.

Though the marketing structure of the manufactured dairy products has tended to become more direct and concentrated in the hands of fewer agencies, many production plants are still relatively small. Nearly two-fifths of the butter and over one-half of the cheese were produced in plants employing less than twenty men in 1947. Both evaporated milk and ice cream factories tended to be much larger. Plants tended to specialize in one product. Seven out of ten plants in 1944 produced only one product. About 50 percent of the butter plants, about 85 percent of the cheese plants, 72 percent of the ice cream plants, and 63 percent of the evaporated milk plants were single product plants. For all practical purposes, the ability of plants to shift from the manufacture of one product to that of another was not great.[17]

[16] A detailed account of this change in the marketing channels is found in two bulletins by William H. Nicholls, *Post-War Developments in the Marketing of Butter* and *Post-War Developments in the Marketing of Cheese*, Iowa Bulletins 250 and 261, 1939.

[17] J. M. Cowden and H. C. Trelogan, *Flexibility of Operation in Dairy Manufacturing Plants*, USDA Circular 799, 1948. See also H. L. Cook, P. L. Kelley, E. F. Koller, and A. H. Miller, *Butter Pricing and Marketing at Country Points in the North Central Region*, Minnesota Bulletin 203, 1952.

*Product Development*

Substantial changes in manufacturing methods and product quality have occurred. The butter and cheese made by the many small plants originally varied markedly in quality. One of the earliest programs of the Land O'Lakes Cooperative Association was to place emphasis on the standardization of the quality of its butter. In 1924, the Association was instrumental in setting up federal-state graders at its various concentration points. With grading done near production points, premiums for quality could be paid to those who deserved them. Along with the quality improvement came the establishment of the brand name, "Land O'Lakes," and a merchandising program to promote the quality product.[18]

The development of processed cheese and the shift from bulk cheese to packaged loaves similarly made possible a cheese product more uniform in quality. Here also the merchandising possibilities of branded products were recognized. Evaporated milk also is a highly branded product.

*Pricing Problems*

The tendency of the manufactured dairy products to move more directly from the factory to retail outlets has meant that much by-passes the central wholesale markets. The growth of large-scale firms which distribute these products also has increased the possibility of price manipulation. Many of the marketing problems of these products center around the pricing process.

In the early years of the butter industry, a large proportion of the total supply passed through the large central wholesale markets such as New York and Chicago. Here the organized exchanges for both cash and futures trading developed. Though these products are by-passing these market centers in increasing volume, prices still are based largely upon the quotations of these centers. A study of the pricing of butter at Iowa creameries found that these creameries sold almost exclusively subject to prices quoted on the Chicago and New York exchanges. Though these terminal prices furnished the basis of the quotation, almost every creamery made an individual agreement with its buyers. Of the seventy creameries studied, all but twenty-four received either a premium or a discount from the central quotation.[19] (For details see Table 1, Chapter 11.)

A study of pricing practices of butter plants in the mid-west concluded that commercial prices reported on the commonly used central markets

[18] For an interesting account of the growth of this cooperative, see K. D. Ruble, *Men to Remember* (Chicago, Donnelly and Sons), 1947.

[19] A. G. Mathis and D. E. Hirsch, *Butter Pricing by Iowa Creameries*, USDA, Farm Credit Administration Circular C-136, 1950.

underquoted the actual market in the sense that premiums were added to them in obtaining the gross prices paid at country points. The varying premiums resulted in the actual prices received at creameries varying in such an irrational manner that it was impossible for the average creamery manager to tell what his grade of butter should bring at his plant location. The study further concluded that creameries would have profited from being more aggressive in their bargaining relationships with those to whom they sold their butter. Some buyers of butter often paid significantly different prices to plants in the same locality.[20]

A similar situation exists in the marketing and pricing of cheese. Bulk cheese prices are largely established on the two Plymouth, Wisconsin, exchanges. The price for cheese paid to Wisconsin factories is almost universally based on the prices at the Plymouth exchanges. Both the Chicago and New York wholesale cheese markets follow the prices of these exchanges closely. However, here again an extensive system of premiums over the exchange quotation is used. Such premiums are usually secret arrangements between the buyer and the factory. As in the case of butter, one factory does not know what the other is actually receiving.[21]

There is evidence that prices can be influenced by the larger operators. It has been suggested that the purchases and sales on the cheese exchange by large traders tend to maintain price stability. In the period studied, six members of the exchange made over 80 percent of the purchases and nearly two-thirds of the sales for the period.[22] A study of the operation of the Challenge Cream and Butter Association noted that the Association had achieved a strong position in regard to butter prices. It is credited with stabilizing California prices, with the result that there are less day-to-day fluctuations in California butter quotations compared to those in the East.[23]

These are all indications of a departure from the idea of a nearly perfect competitive situation which is often associated with wholesale markets of farm products. Wholesale market prices do not represent the price at which the bulk of butter and cheese is actually traded. Butter and cheese producers often sell their products in relative ignorance of what is the going price. A few large firms appear to have the power to affect prices by their operations. This situation takes on added significance when it is recalled that many fluid milk markets use the quoted prices of these dairy products as a basis for their pricing formulas.

[20] Cook, Kelley, Koller, and Miller, *op. cit.*

[21] Arthur H. Miller, *Pricing American Cheese at Wisconsin Factories*, Wisconsin Bulletin 163, 1949.

[22] Miller, *op. cit.*

[23] Paul E. Quintus, *Operating Methods of Challenge Cream and Butter Association*, USDA, Farm Credit Administration Circular C-119, May, 1940.

CHAPTER SEVENTEEN

# *Poultry and Egg Marketing*

The principal products of the poultry industry are eggs and meat. The most important product as measured in terms of dollar value is eggs (Table 1). Farm chicken meat is largely a by-product of the production of eggs. These two products—eggs and farm chickens—account for about three-fourths of the total value of poultry products. Seventy-eight percent of all United States farms had some chickens in 1950. Broilers and turkeys are important products on fewer, more specialized farms. Because of their different nature, both from production and marketing viewpoints, the marketing of eggs and poultry meat will be discussed separately.

TABLE 1. *Average Output of the Poultry Industry, 1947–51*

| PRODUCT | AVERAGE VALUE | | | CONTRIBUTION TO: | |
|---|---|---|---|---|---|
| | SALES | FARM CONSUMPTION | GROSS TOTAL | TOTAL SALES VALUE | TOTAL GROSS VALUE |
| | MILLION DOLLARS | | | PERCENT | PERCENT |
| Eggs | 1,842.8 | 245.7 | 2,088.5 | 59 | 59 |
| Farm chickens | 498.1 | 149.4 | 647.5 | 16 | 18 |
| Commercial broilers | 474.1 | * | 474.1 | 15 | 13 |
| Turkeys | 270.6 | 4.4 | 275.0 | 9 | 8 |
| Other poultry | 41.8 | 13.9 | 55.7 | 1 | 2 |
| Total | 3,127.4 | 413.4 | 3,540.8 | 100 | 100 |

* Home consumption not separated, but probably would be very small.
SOURCE: Computed from USDA, B.A.E. Statistics.

## EGG MARKETING

### *The Product and Its Production*

Eggs are a relatively perishable commodity. However, under proper handling, quality deterioration can be controlled to the extent that storage for a considerable period of time is practicable. Storage can also be provided for dried and frozen eggs. However, the large proportion of the total supply is moved into consumption in the form of shell eggs.

The production of eggs is widely scattered. Though four out of every five farms in the United States produce some eggs, only less than 5 percent of the farms of the country can be classified as specialized poultry farms. Yet this highly specialized group accounts for nearly half of the total value of poultry products sold. In 1945, nearly three-fourths of all the farms reporting chickens had flocks of less than 100. These farms produced slightly more than one-fourth of the total egg supply. Only 2 percent of the farms reported flocks of over 400. This very small group accounted, however, for another fourth of the egg production. This dual nature of egg production—widely scattered, small, side-line enterprises on the one hand, and highly specialized enterprises on the other—must be continually kept in mind if the problems of egg marketing are to be fully understood.[1]

Marked changes have been taking place in egg production. Total production has increased sharply (Figure 1). During 1945-1949, egg production was nearly 50 percent above that of 1935-1939. A considerable amount of this production increase was the result of increased productivity of the hen. During this period, the rate of lay increased about 35 percent while the number of layers increased only about 10 percent. This means that even though hen numbers may decline, egg production may continue to increase.

There has also been a tendency toward less seasonal variation in production. The period of peak egg production comes during the months of February through June. The period of low production occurs during October through December. During 1925-1929, 69 percent of the yearly production of eggs came during the highest six months of the year, with 31 percent during the lowest six months. During 1945-1949, these percentages were 60 and 40 respectively. Such developments have reduced the amount of eggs moving into storage during the peak production season. The storage stocks of eggs on August 1 (usually the month of peak storage holdings) averaged 11 percent of the total production of the preceding six months

[1] R. P. Christensen and R. L. Mighell, *Competitive Position of Chicken and Egg Production in the United States,* USDA Technical Bulletin 1018, 1950.

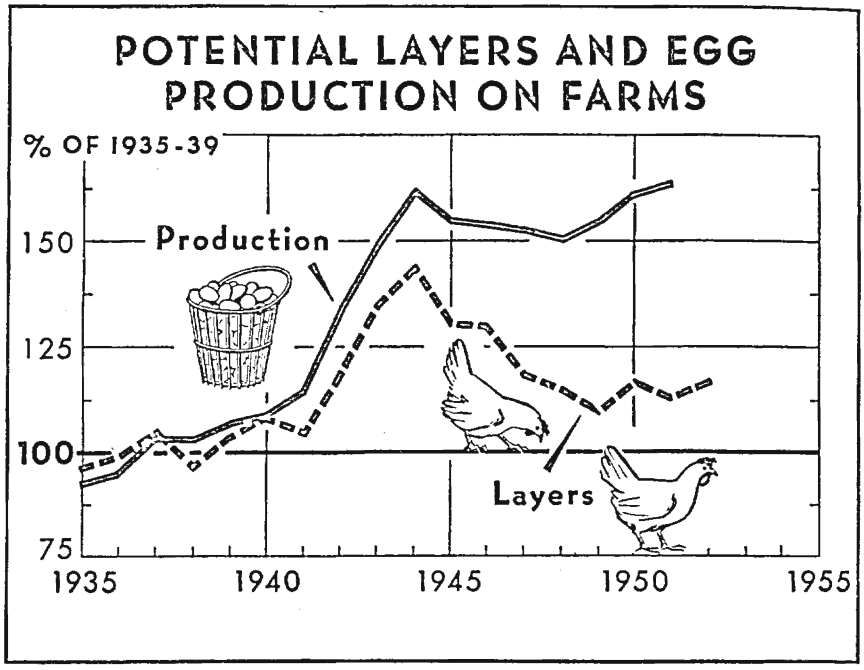



FIGURE 1. *Number of layers and egg production showing the results of the increased rate of lay. (Courtesy USDA.)*

during 1945-1949 compared with 15 percent of the preceding six months' production during 1925-1929.[2] With less seasonal fluctation of production, there is less seasonal variation in prices than in earlier years.

*Marketing Channels*

The widespread, small-unit nature of egg production has fostered a large variety of agencies engaged in the buying and collection of eggs in the country for shipment to other markets. A study of Table 2 will show differences in outlets which can be attributed to the different production patterns as well as the geographic locations. In the nonspecialized North Central and Southern areas, the local grocer store is a principal egg buying agency. In the more specialized Northeastern area, this outlet is not so widely used. Here the cooperative association and the buyer from larger outside outlets are more important. There is also reason to believe that some outlets are more important during the heavy production season of the spring than in the light production season of the fall. This is indicated by difference in the April and August outlets used in the North Central region (Table 2).

[2] Christensen and Mighell, *op. cit.*

These various country buyers in turn sell to a large variety of outlets. During the period of low production, many of the eggs may be retailed in the cities of the local area. In the heavy production season, more eggs are shipped to wholesale receivers located at the large consumption centers. There many will be stored for consumption during the season of low production.

TABLE 2. *Producer Sales of Eggs by Type of Market Outlet*

| TYPE OF OUTLET | NORTH CENTRAL REGION, 1948 * APRIL | NORTH CENTRAL REGION, 1948 * AUGUST | NORTHEAST REGION 1948 † | NINE SOUTHERN STATES, 1947 ‡ |
|---|---|---|---|---|
| | PERCENT OF TOTAL | | | |
| Local dealer | 29.7 | 35.5 | 10.6 | 8.0 |
| Trucker or outside buyer | 13.1 | 16.3 | 28.6 | 11.0 |
| Cooperative association | 9.1 | 9.7 | 17.7 | 3.0 |
| Retail store | 26.2 | 24.2 | 13.4 | 48.0 |
| Hatchery | 12.6 | 2.0 | 7.2 | 5.0 |
| Hotel, restaurant, bakery | — | 1.2 | 3.3 | — |
| Consumer | 6.4 | 9.6 | 18.9 | 21.0 |
| Others | 2.0 | 1.5 | 0.3 | 4.0 |
| All outlets | 100.0 | 100.0 | 100.0 | 100.0 |

* W. N. Starkey, O. C. Hester, and L. F. Hermann, *Sales of Eggs by Farmers in the North Central Region*, USDA Agricultural Information Bulletin 46, 1951.

† O. C. Hester, *Egg Marketing Channels and Methods Used by Northeastern Producers*, USDA Agricultural Information Bulletin 69, 1951.

‡ *Marketing Eggs at the Producer Level in Nine Southern States*, Southern Cooperative Series Bulletin 17, 1951.

The proportion of the total marketing charge taken by the local assembly agencies is greater for eggs than for many other agricultural products. (See Table 4, Chapter 5.) To a considerable extent, this can be explained by the nature of the production. Eggs must be collected from a great number of small producers scattered throughout the country. For example, the average weekly sale of eggs by producers in the North Central states during April was about thirty-six dozen; in August, this figure had dropped to about twenty-three dozen.[3] In the southern states, where the flocks tended to be still smaller, weekly sales were less than this and the seasonal variations still more pronounced.[4]

Under such conditions, the volume handled by many of the agencies

[3] W. N. Starkey, O. C. Hester, and L. F. Hermann, *Sales of Eggs by Farmers in the North Central Region*, USDA Agricultural Information Bulletin 46, 1951.

[4] *Marketing Eggs at the Producer Level in Nine Southern States*, Southern Cooperative Series Bulletin 17, 1951.

assembling eggs is no doubt considerably below that necessary for the lowest cost operations. This helps explain why many buying stations also buy cream, wool, and other products. This small volume characteristic of sales also helps explain why many retailers are side-line egg buyers. The benefits of larger-scale operation can be realized more fully in the more specialized areas of production. There appears to be less business stability in egg handlers than in many other businesses, and the rate of business mortality is high. The large number of handlers operating in areas which cannot furnish the volume for efficient operation may be a principal cause for this.[5]

Many egg buyers have established truck routes to pick up eggs from producers. The proportion of eggs picked up at the farm ranges from 24 percent in the southern states to over 40 percent in the northeastern states. The remainder of the eggs are delivered by farmers to the buyers. In many instances, the pickup route must serve a wide territory in order to secure adequate volume. Forty-five percent of the egg routes studied in Indiana were over 100 miles in length. In Ohio, the average length of the routes studied was 152 miles. The least efficient Ohio routes were 163 miles long and assembled about one-third of a case for each mile traveled; the most efficient were 89 miles long and assembled about two cases for each mile traveled.[6] Here again the importance of volume for low cost operation is illustrated.

*Problems of Quality*

Problems in the maintenance of quality in eggs start on the farm. It is generally agreed that the hen lays eggs which in the majority of cases are high quality as measured by current grading systems. However, it was found that only about two-thirds of the eggs which were delivered to the country buying stations were of top quality.[7] Between the time of laying and the time the farmer sold them to the first buyer, one egg in every three had dropped below Grade A quality.

Eggs continue to deteriorate as they move on through the marketing channel. Between the country buyer and the carlot assembler which may be the next step in the marketing channel, an average of thirteen eggs per hundred dropped in quality one grade.[8] What is the quality of eggs which finally reaches the retail stores? This varies widely. Some stores make

[5] W. P. Mortenson and T. F. Graf, *Marketing Eggs in the Lake States*, Wisconsin Bulletin 168, 1950.

[6] T. C. Rothbauer, G. B. Wood, and J. H. Martin, *Poultry and Egg Truck Routes in Indiana*, Indiana Bulletin 571, 1952, and R. E. Cray, *The Efficiency and Cost of Collecting Eggs from Farms in Ohio*, Ohio Bulletin 721, 1952.

[7] *Changes in Egg Quality During Marketing*, Michigan Special Bulletin 361, 1949.

[8] *Ibid.*

particular efforts to handle high quality eggs; others through poor handling offer relatively low quality eggs for sale. There is also evidence that egg quality varies considerably from city to city.[9]

Part of this quality deterioration is inherent in the marketing of a perishable product. Egg driers and breakers utilize much of the lower quality products. However, part of the deterioration in quality is preventable through improved handling methods. Better handling practices by the farmer may reduce the initial quality loss. One study found that if seven different farm practices in handling the farm flock and eggs were followed, 90 percent of the eggs marketed were of "A" quality. If none of these practices was followed, only 55 percent were of "A" quality.[10] Speed, refrigeration, and care in handling will help reduce quality deterioration at both the wholesale and retail levels.

What are some of the causes of this continuing neglect in the handling of eggs? One is that a great many producers do not find it profitable to strive for product quality. In the North Central region, nearly 60 percent of the eggs are sold by farmers on the ungraded basis. In the Southern region, 90 percent of the eggs are sold ungraded. In the highly specialized New England area, however, it is indicated that only about 5 percent are sold ungraded.[11]

On the other end of the marketing channel, a large proportion of eggs which consumers buy are not designated by grade. The ability of the housewife to judge accurately the difference between Grade "A" and Grade "B" eggs is very limited. The term "fresh eggs" appears to have more impact on consumer acceptance than the grade label. In one city, less than half of the consumers contacted knew that the term "Grade A" signified top quality. In addition to this, many studies have shown the lack of relationship between the price which the consumer pays and the quality of egg received. Consumers apparently cannot rely on price as an indicator of quality.[12]

The egg grading system as now constituted is extensively used only by the wholesale handlers within the marketing channel. The question is

[9] See, for example: N. Nybroten, *Marketing Eggs in Retail Stores of the Northeast, 1949* and *Retailing Eggs in West Virginia Stores*, West Virginia Bulletins 353 and 354, June, 1952; D. M. Spiller and G. B. Wood, *Egg Quality in the Indianapolis Market*, Indiana EC 54, 1951; S. K. Seaver and R. A. King, *Marketing Eggs Through Wholesale Channels* and *Marketing Eggs Through Retail Stores*, Connecticut Bulletins 269, 1951, and 268, 1950; and R. L. Kohls and N. Oppenheimer, *Quality Recognition and Purchasing Habits of Egg Consumers*, Indiana Bulletin 592, 1953.

[10] *Poultry Farm Practices and Egg Quality*, USDA Marketing Research Report 22.

[11] Starkey, Hester, and Hermann, *op. cit.*; Southern Cooperative Series Bulletin, *op. cit.*; and W. Earle, *Business Operations of Northeastern Wholesale Egg Buyers*, New York Bulletin 868, 1950.

[12] Kohls and Oppenheimer, *op. cit.*

largely unanswered as to what is the quality desired by the consumer and what price she will pay for it. The grading system is not adequately serving its purpose of guiding production through price. It is not surprising that producers and handlers are not vigorously pressing to handle eggs in a way that will assure high quality.

## POULTRY MARKETING

During the five-year period, 1946–1950, the per capita consumption of red meat averaged about 148 pounds. During this same period the per capita consumption of chicken averaged about twenty-five pounds and that of turkey slightly more than four pounds. Poultry meat has been largely a by-product of egg production in the form of old hens, roosters, young fryers, and roasters. In recent years, an increasing proportion of the total supply, however, has been coming from the commercial broiler industry. In 1940, only 14 percent of the total chicken meat came from broilers; by 1950, broilers accounted for 40 percent of the total chicken supply (Figure 2).

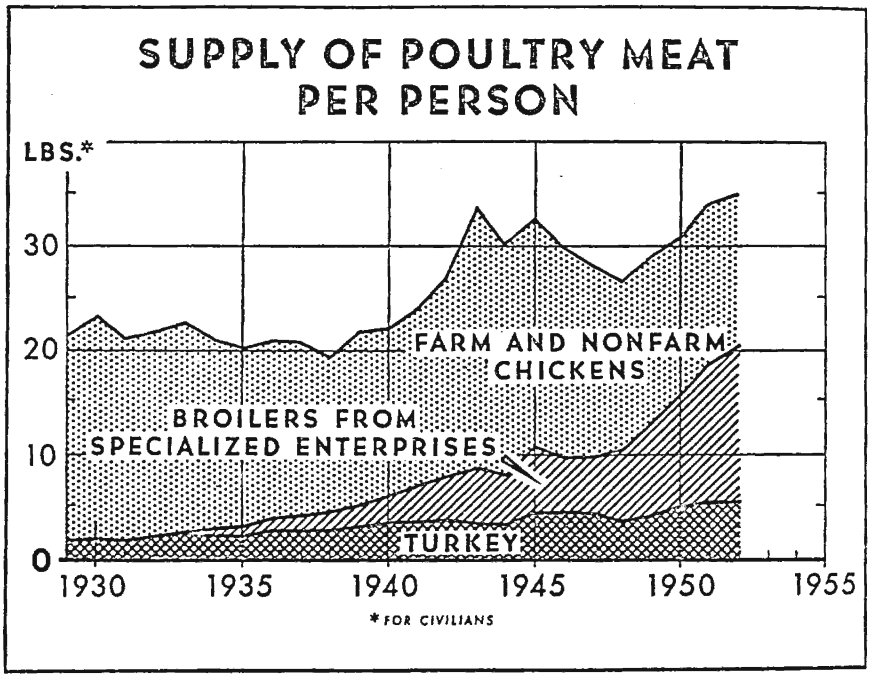



FIGURE 2. *The composition of the poultry meat supply showing the growing importance of commercially grown broilers as a source of poultry meat. (Courtesy USDA.)*

The principal marketing channels of chickens consist of poultry buying stations which buy from farmers in the production areas. Shippers buy in small lots from these country buyers and sell to live chicken wholesalers, processors, and wholesalers of dressed chickens. These wholesalers sell to the retail store.[13] Poultry may be sold to consumers either alive or dressed. In recent years, the amount of chickens sold alive to consumers has sharply declined. Live receipts in New York City, the nation's largest live poultry market, declined from 60 percent of the total receipts in 1920 to 25 percent in 1950. Dressed poultry may be sold either "New York dressed" (killed and picked only) or "oven ready" (picked and completely eviscerated). The trend has been toward the "oven ready" dressed chicken and away from the New York dressed birds. Frozen poultry has also become of considerable importance, increasing from less than 1 percent of total production in the late 1930's to over 6 percent in 1950.

In the marketing of poultry, as in that of eggs, the necessity of assembling the birds from widespread small producers is one of the principal factors contributing to high marketing costs. Country buying points are often too small for efficient operation. Country buying on the basis of quality is not widely practiced. It was estimated that in 1950 less than 10 percent of the farm chickens and about 28 percent of the turkeys were graded under federal and state grading programs. Such situations make the collection and dissemination of meaningful price and market information difficult.

Poultry slaughtering facilities were originally concentrated in the wholesale markets of the large urban centers. In recent years, more and more facilities are being built in the production areas. Provided production area plants can obtain a volume for an efficient scale of operation, the potential savings in transportation and other marketing costs are great. However, such a decentralization raises the same problems in pricing as those discussed for butter. Terminal market quotations are used widely to price poultry even though the may no longer be based on an adequate volume of trading.

It has been felt by much of the industry that the poor quality of products in retail stores has been a limiting factor to the consumer acceptance of poultry. With better quality control in dressing plants and the increased acceptance of fully dressed fresh or frozen chicken, consumers will be offered a more attractive product. Many of the large chain retailers have taken the lead in improvement of quality either by operating their own processing facilities or by the establishment of rigorous standards of

[13] E. P. Winter, *Marketing Margins and Costs for Poultry and Eggs*, USDA Technical Bulletin 969, 1948.

quality which their suppliers must meet. In the late 1930's, less than 3 percent of poultry sales were slaughtered under federal inspection. By 1950, this had risen to about 12 percent.

*The Commercial Broiler Industry*

The commercial broiler industry offers an example of the marketing problems which occur as a new industry develops. Commercial broilers (in reality a misnomer, since most "broilers" are marketed at fryer weights of three pounds or more) were not produced in any quantity until the middle 1930's. At that time, commercial broilers were really a side-line enterprise, with the producer raising only one or two broods a year. From 1934 to 1950, broiler production increased on the average about 14 percent each year (Figure 3). The industry in its growth became a highly specialized year-round operation heavily concentrated in a few areas.

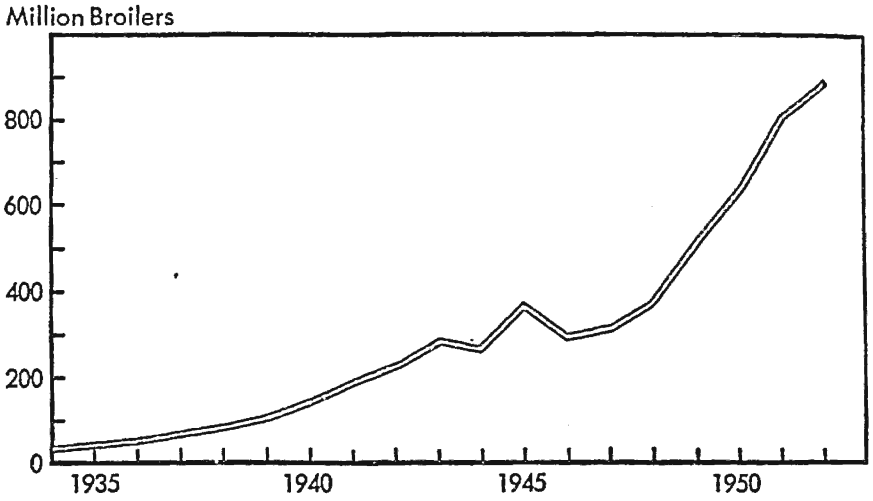



FIGURE 3. *Trend in United States broiler production. (Source: USDA, B.A.E.)*

The leading broiler areas of the country are the Del-Mar-Va peninsula and northwest Georgia. Other important areas of concentration are in the Virginia Shenandoah Valley, northwest Arkansas, North Carolina, Texas, California, Maine, Indiana, Mississippi, Missouri, and Connecticut. These various areas account for nearly 75 percent of the nation's total broiler output. These widely scattered areas have various histories of development. No one set of criteria can be used to explain the location pattern. Some are close to eastern markets, but in areas of high feed and labor costs. Others are far from market, but close to sources of surplus feed. Some have

developed in areas of excess cheap labor. In some areas, alternative farming opportunities are limited; in others, such opportunities are many and varied.

Though the location pattern is not easily explained, there appear to be at least two major explanations for the rapid growth of the industry. One of these lies in the pattern of expansion of egg production. As previously pointed out, the increased egg production was secured from only a moderately larger laying flock, but with a marked increase in the rate of lay (Figure 1). This meant that relative to the growing population there was a smaller supply of poultry meat available as a by-product of egg production. Into this gap stepped the broiler industry (see again Figure 2). The other reason for growth lies in the rapid technological improvements which permitted a continually lower cost of broiler production. Part of this improvement was in the development of improved strains of chickens for meat production. Another development was in the field of feed nutrition which led to greater meat production per pound of feed. Improved brooding and feeding equipment both reduced the labor required and the mortality rates.

In the early years of the industry, most of the birds were shipped alive from the production area to processing plants located in the central markets. In some areas, this is still true. However, production area processing has been increasing. It is estimated that 90 percent of the Del-Mar-Va production, 75 to 85 percent of the Shenandoah Valley production, about 66 percent of the Georgia production, and about 50 percent of the Arkansas production are now processed in the production area.[14] In the Del-Mar-Va area, for example, birds are processed and moved by overnight trucks to New York City in order to assure the consumer a high quality, fresh product.

A high degree of vertical integration has also developed within the production process and the marketing channel. In some areas, large feed companies operate hatcheries and processing plants. These companies may also extend credit to producers, supervise production operations, and finally buy the finished product. In some situations, the feed-hatchery financier assumes most of the risk in both the production and marketing. Under these circumstances, producers may be little more than hired laborers receiving a wage or guaranteed return per bird. The broiler industry offers one of the few examples in agriculture of across-the-board control of production, processing, and marketing by a single agency.

This industry also furnishes an example of one of the more sensitive agricultural industries from the standpoint of output regulation. Produc-

[14] S. T. Rice, *Interregional Competition in the Commercial Broiler Industry*, Delaware Bulletin 290, 1951.

tion can be started and the product marketed within a twelve-week period. The broiler operation is relatively independent of climate. These factors plus the development of the commercial producer who is largely dependent on the sale of broilers for his income have encouraged continuous year-round production. However, it is a production which can be regulated quickly to favorable or unfavorable market conditions. Because of this, the violent seasonal price pattern of the 1930's has been replaced by a one with little seasonal variation.

*The Turkey Industry*

The turkey industry, similar to the broiler industry, has been one of recent rapid growth. The number of turkeys raised has tripled during the decades of the thirties and forties (Figure 4). Production also has tended

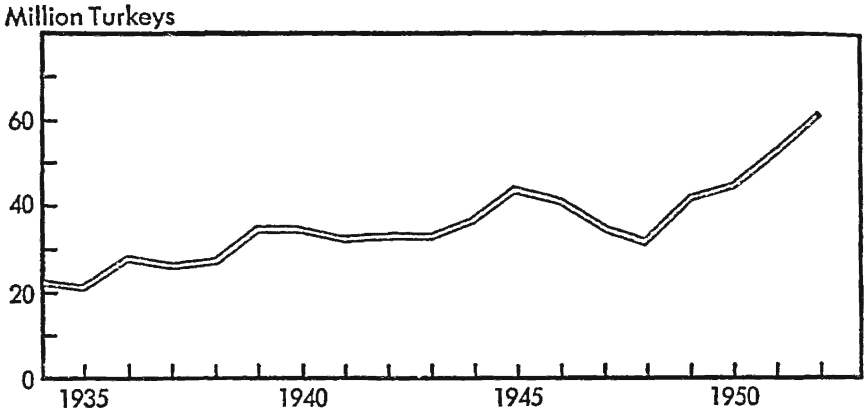



FIGURE 4. *Trend in United States turkey production. (Source: USDA, B.A.E.)*

to become more specialized. In 1929, four times as many farms reported raising turkeys as in 1949. However, in 1949, there were more than two and one-half times as many turkeys raised. This means, as was the case with broilers, that the small side-line producer is being forced out and that those remaining are producing larger and larger flocks. Production has also tended to concentrate in certain areas. The western states of California, Oregon, Washington, and Utah raise nearly one-third of the nation's turkeys. Other leading areas are located in Minnesota, Iowa, Texas, and Virginia.

Traditionally, turkey is the meat for the Thanksgiving and Christmas holidays. In the middle 1930's, three-fourths of the turkeys raised were sold

during this holiday season. Only about 5 percent of the total production was put into storage for consumption at other times of the year. With the rapid expansion of production, the industry made considerable effort to encourage more consumption during the other months of the year. The marketing season was extended, until during the latter part of the 1940's about one-third of the birds was marketed in periods other than the holiday season. The amount of meat which was put into storage increased to an average of about 15 percent of total production.

With the household unit getting smaller, the problem of moving the large turkey into consumption has become more difficult. Through pressure for increased turkey consumption, attempts have been made to reach additional consumers by selling turkey quarters, halves, and pieces. Such efforts have met with only limited success, though the potentialities seem great. The housewife, who has been accustomed to handling the whole bird, must be educated to the proper ways of preparing the partial turkey.[15] The resistance which the industry has met in changing consumption patterns illustrates the many problems both in consumer preference and in the functioning of the various agencies in the marketing process which are encountered in changing long established practices and customs.

The introduction of the Beltsville small white turkey is another way of attempting to secure a smaller bird to meet consumer needs. The production of the turkey "fryer"—a turkey which is finished quickly at weights comparable to a large hen—also is offering consumers a different turkey product available on a year-round basis. Both of these developments are accounting for an increasing portion of the total turkey production.

The large surplus production areas are located far away from the consumption areas of the East. This has fostered the development of large cooperative associations which have sought to retain control of the birds throughout the marketing channel. These cooperatives own processing plants in the production area, operate storage facilities, and employ sales representatives in the eastern markets. In the early days, most turkeys were sold alive and shipped to the large cities for processing and storage. There now is an increasing tendency for farmers themselves to hire the processing done (or own their own facilities) in the production area and take the risk of storage themselves. Such marketing activities have become feasible only with the increased specialization and volume of individual producers.

[15] L. E. Dawson and G. B. Wood, *Merchandising Turkey Quarters*, Indiana Bulletin 537, 1949.

## PROBLEMS OF INTEGRATION AND PRICING

The poultry industry furnishes an excellent illustration of the problems which arise in marketing products which are produced in small amounts scattered over broad areas. The products change hands many times in the marketing channel. Many of the handlers operate on a scale which is too small for the greatest efficiency.

The lack of widely accepted grade standards plus the small scattered agencies and diversified methods of buying makes for many faulty pricing situations. Price quotations from central terminals have only limited meaning. For example, broilers are purchased on certain markets on the basis of country weights or market weights plus 5 percent. On other markets, the broilers are purchased on the basis of the market weight. Price quotations under these two situations cannot be directly compared. The marketing agencies on the former market are assuming much of the shrinkage which occurs between the country and the city. Therefore, a quoted price on that market equal to the price quoted on markets following the latter practice is in fact a higher price.[16] In addition to the differences in trade practices, the wholesale poultry markets in many of our cities operate in a very disorganized fashion. Assembling meaningful quotations which accurately represent the prevailing price level is a difficult task.

There is evidence that active competition for buying eggs and poultry in the production area is limited. In one area, over three-fourths of the lots of chickens were sold after obtaining only one bid from prospective buyers.[17] This is in rather sharp contrast to the way in which farmers often "shop around" when selling their hogs, and is probably due to the generally small scale and relative unimportance of the poultry enterprise. Large flock owners tend to receive more for their eggs than small flock owners.[18] There is evidence that the large-scale producer follows better handling practices which result in higher quality eggs. He therefore should receive higher prices. However, it is also probable that the large-scale producer is more active in shopping around for the best outlet or buyer for his product.

Such conditions as described above mean that when the poultry enterprise reaches large-scale specialization in certain areas, new and better outlets are sought. Often these take the form of vertical integration in the

[16] R. L. Kohls and T. C. Walz, *Broiler Trucker-Buyers in Indiana*, Indiana Bulletin 580, 1952.

[17] R. H. Anderson, *Marketing of Chickens from Producer to First Handler, Washington, Oregon and Utah, 1948–49*, Utah Bulletin 354.

[18] See footnote 3.

marketing channel. This has been the development in the specialized turkey areas through the growth of the marketing cooperatives. It has also been true in commercial broiler areas usually under the direction of the financing agency. Egg marketing cooperatives often attempt to obtain quality outlets by dealing directly with wholesalers and retailers. The large chain stores in search for assured supplies of standardized quality have reached backward in the marketing channel and established direct buying and processing facilities in the production areas. Such developments in simplifying the marketing channels offer considerable opportunities for reducing marketing costs.

Real progress in improving the marketing and pricing structure, however, can come only as fast as production tends to become more concentrated and specialized. Then will producers become more actively interested in improving their situation and force a more active competitive situation. Also, the assembling and processing agencies then will be able to capitalize on the economies which arise from specialization and large-scale operations.

CHAPTER EIGHTEEN

# Grain Marketing

## THE PRODUCTS—THEIR PRODUCTION AND USE

The principal grains of the United States are corn, wheat, oats, barley, and rye. Soybeans are not a grain but an oilseed, but they are included in this discussion of grain marketing problems. There are, of course, other grains produced, many of which are of considerable regional importance.

The concentrated corn, oats, and soybean production area is in the North Central region—the "corn belt." The principal wheat area lies to the west of the corn belt occupying the tier of the great plains states from Texas north to the Dakotas. The northern part of this group of states is also the principal rye and barley growing area. Grain sorghums are grown mostly in the southwestern states of Texas and Oklahoma.

### *Product Utilization*

All of these grains are the raw material for conversion into some other product. Feed grains are converted into pork, beef, poultry, and dairy products. Figure 1 illustrates the movement of corn into its various uses. In recent years corn has made up about 60 percent of the total grain and by-product feeds for livestock. It is this relationship which ties livestock so closely to feed grain production. As indicated in Figure 1, such food industries as the meat packing and dairy products industries are indirectly but closely tied to the problem of feed production and marketing. Food grains are usually first converted into flour which is the raw material of the baking industry for bread and other bakery products. In recent years a sizable portion of the wheat crop has been exported to foreign countries.

The principal products from soybeans are the oil and meal. In recent years, about 50 to 60 percent of the value of soybeans has been derived

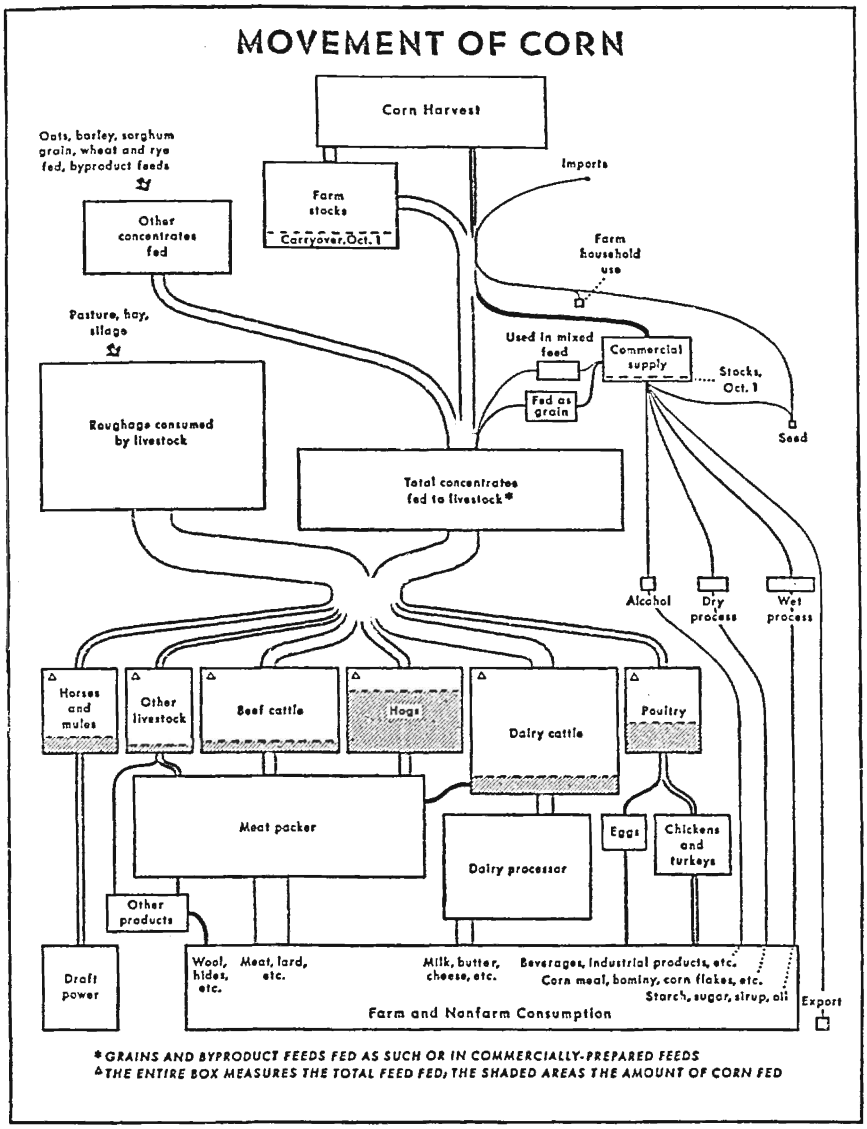



FIGURE 1. *The utilization of the nation's corn supply showing the close relationship between livestock and feed production. (Courtesy USDA.)*

from the meal and about 40 to 50 percent from the oil. In 1948, soybean meal amounted to 21 percent of all by-product feed, surpassed in importance only by wheat millfeeds. Soybean oil represented 22 percent of the total supply of food fats in 1948, exceeded only by lard and butter.[1] As a major source of food fats and oils, soybeans are comparatively new. Figure 2 shows the rapid growth of soybean oil compared to other vegetable fats

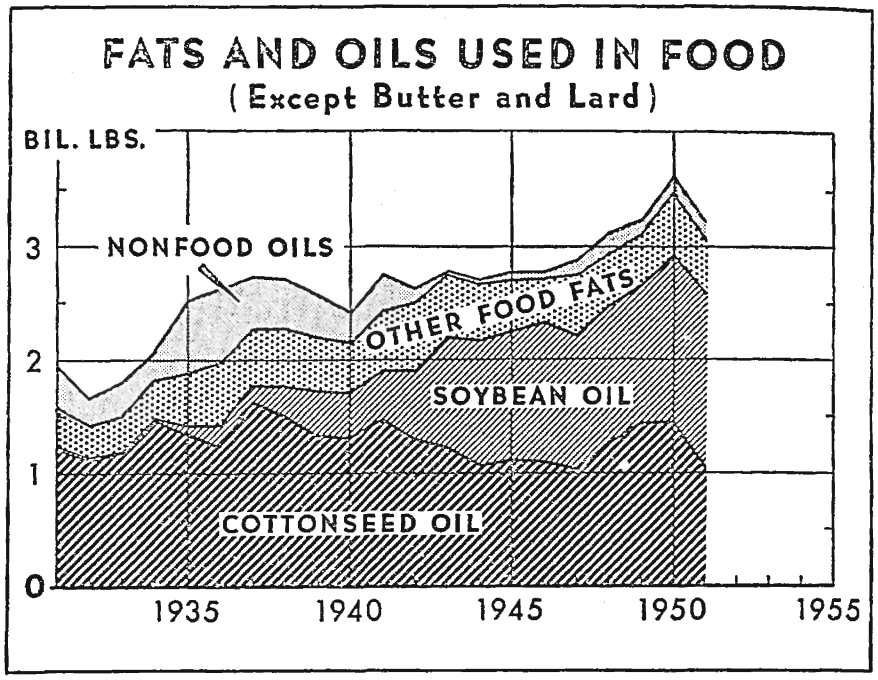



FIGURE 2. *The changing composition of supplies of fats and oils. (Courtesy USDA.)*

and oils. It is now the largest single source of vegetable fats and oils. Nearly three-fourths of the soybean oil is used in margarine and shortening manufacture.

Table 1 shows the utilization of several grains. Nearly nine-tenths of the corn and oats is used as livestock feed. Though these are the largest crops from the standpoint of bushels produced, only a very small amount actually moves into the commercial marketing channels, since most are consumed on the farms where they are grown. In the case of wheat, however, a very large proportion of the total production is sold from the farms to be further processed. The same is true of soybeans.

[1] Don Paarlberg, *Prices of Soybeans and Soybean Products*, Indiana Bulletin 538, 1949.

TABLE 1. *Utilization of Important Grains and Soybeans, United States, 1946–1950 Average*

| USE | WHEAT | | RYE | | CORN | | OATS | | BARLEY | | SOYBEANS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MIL. BU. | PERCENT OF TOTAL | MIL. BU. | PERCENT OF TOTAL | MIL. BU. | PERCENT OF TOTAL | MIL. BU. | PERCENT OF TOTAL | MIL. BU. | PERCENT OF TOTAL | MIL. BU. | PERCENT OF TOTAL |
| Livestock feed | 135.0 | 12 | 5.7 | 22 | 2,617.6 | 89 | 1,210.8 | 88 | 140.9 | 50 | 3.2 | 2 |
| Seed | 87.5 | 8 | 4.9 | 19 | 11.5 | * | 103.5 | 8 | 19.6 | 7 | 16.6 | 8 |
| Starch, sugar, sirups, etc. | — | — | — | — | 126.3 | 4 | — | — | — | — | — | — |
| Breakfast foods | — | — | — | — | 10.4 | * | 40.6 | 3 | — | — | — | — |
| Other food purposes | 483.0 † | 43 | 4.7 | 19 | 84.9 | 3 | — | — | 6.5 | 2 | 179.6 § | 86 |
| Alcohol spirits | .2 | * | 6.0 | 24 | 39.5 | 1 | — | — | 90.6 | 32 | — | — |
| Exports | 423.0 ‡ | 37 | 4.1 | 16 | 91.7 | 3 | 13.1 | 1 | 26.0 | 9 | 9.1 | 4 |
| Total utilization | 1,128.7 | 100 | 25.4 | 100 | 2,981.9 | 100 | 1,368.0 | 100 | 283.6 | 100 | 208.5 | 100 |

* Less than 0.5 percent.
† All food uses, including breakfast food.
‡ Includes military relief and shipments to overseas possessions.
§ Crushings for oil and meal.
SOURCE: USDA, Bureau of Agricultural Economics.

Grain used in commercial mixed-feed manufacture is not sorted out in Table 1. This is a growing outlet for grains and their by-products. Between 1939 and 1947 the number of feed-mixing plants doubled. In 1947, it was estimated that slightly over 22 million tons of commercially prepared feed were sold. This was more than twice the amount sold in 1939. Such feed represented 18 percent of all the feed concentrates used in 1947 compared to 10 percent in 1939. About half of the mixed feeds produced in 1947 was poultry feed. Cattle feeds—particularly dairy—accounted for another one-fourth of the output.[2]

*Variable Production*

The acreage planted to the various grains does not vary markedly from year to year, but the production does. This is largely because of the weather and its effect on yields. Production is also highly seasonal. Most of the corn is harvested during October through November. The entire crops of wheat, oats, and rye are harvested during the relatively short period of June through September. The soybean crop is harvested during the early fall months.

In contrast to the seasonal nature of production, there is a fairly constant demand throughout the year either for animal or human food. Somewhere in the marketing channel, then, must be the facilities for the huge amount of seasonal storage.

The unpredictable nature of production also means that some stocks must be carried over from one year to another. This is necessary if there is to be any stability of supplies of food and feed from year to year. If the harvest is a bumper one, the season-end carry-over will be large. If the harvest is small, the carry-over will be much reduced. Such carry-overs are the safety factors which protect dependent industries from violent feast-and-famine fluctuations. Table 2 shows the source of our annual average total available supply. For most of the grains the average carry-over has been running from one-sixth to one-fifth of our total supplies.

The government loan programs to support prices, of course, have a definite effect on the amount of carry-over. How much carry-over the country should assure itself is a matter of public debate. If part of the carry-over is government-owned because of its price support operations, the composition of the carry-over becomes an important factor. The amount which is in private hands is "free" to move in response to market price fluctuations. The amount which is in government hands is "frozen" and can be released only for commercial use when prices reach certain levels or under certain circumstances prescribed by law.

[2] W. R. Askew and V. J. Brensike, *The Mixed-Feeds Industry*, USDA Marketing Research Report 38, 1953.

TABLE 2. *Composition of the Annual Available Supply of Selected Grains in the United States, 1946–1950 Average*

| | WHEAT | RYE | CORN | OATS | BARLEY | SOYBEANS |
|---|---|---|---|---|---|---|
| | PERCENT OF TOTAL | | | | | |
| Production | 84 | 70 | 87 | 84 | 78 | 98 |
| Carry-over | 16 | 17 | 13 | 15 | 19 | 2 |
| Imports | * | 13 | — | 1 | 3 | — |
| Total supply | 100 | 100 | 100 | 100 | 100 | 100 |

* Less than 0.5 percent.
SOURCE: USDA, Bureau of Agricultural Economics.

## THE MARKETING CHANNELS

Unlike such commodities as poultry, which has a large number of agencies involved in the marketing channel, the channel followed by grain in moving to market is relatively simple. First, we must again recall that a great proportion of some grains is never sold from the farm as such. It is fed and marketed through livestock. Of the grain which is sold by farmers, 80 to 90 percent is sold to country elevators. Country elevators in turn sell about 75 percent of their purchases to terminal elevators. Terminal elevators then sell their purchases largely to millers and to mixed-feed and other types of manufacturers. Food grains then move from the millers to bakeries and finally through various wholesale and retail channels to consumers.[3] Figure 3 shows the marketing channel which is followed by the major food grain, wheat. The soybean channel is even simpler, as the major movement is from farmer to country elevator to processor.[4]

### *Country Elevators*

For most producers, the country elevator is the major buyer for their grain. These elevators are scattered throughout the production area, usually along railroads. The typical country elevator is estimated to have a storage capacity of from 25,000 to 30,000 bushels, though many are much larger. Depending upon the size of crop, they will handle from 100,000 to 300,000 bushels annually.[5]

Country elevators fall into three general classes according to their ownership and organization. The independent elevators are under the

[3] D. R. Stokes, *Marketing Margins and Costs for Grains, Grain Products, and Dry Edible Beans*, USDA Technical Bulletin 934, 1947.
[4] A. R. Sabin, *Marketing Channel and Margin for Soybean and Soybean Products*, USDA, Bureau of Agricultural Economics, 1950.
[5] D. W. Mallott, "Grain and Its Marketing," *Grain Exchange Institute, Inc.*, 1947.

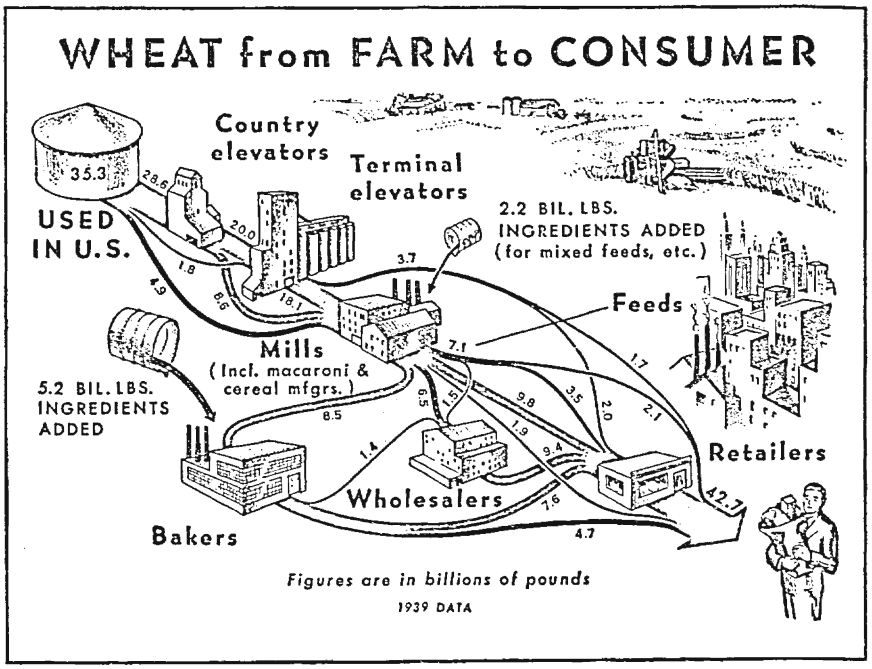



FIGURE 3. *The marketing channel of wheat as it moves from the farm to the consumer. (Courtesy USDA.)*

operational control of their individual owners. Cooperative or farmer-owned elevators are owned and operated cooperatively by the farmers of the area. These may either be organized singly or in state-wide groups. The third type is the line elevator. This is a group of elevators owned and operated from a central headquarters as a chain. Such chains may be owned either by grain companies or millers and processors who use them to secure supplies directly for their manufacturing operations. The ownership of elevators will vary from area to area. In some areas, cooperative elevators predominate. In other areas, the line elevator is predominant.

Many studies have been made of the costs of elevator operations. Most of them have found that roughly half of the total operating costs above the purchase price of grain goes for wages and salaries. Other major expense items are depreciation and repairs, power, and taxes.

Nearly all studies have found that operating costs per bushel handled tend to decline with increasing volume. A study of Illinois elevators concluded that unless at least 300,000 bushels of grain are handled annually, other business lines must be added if the business is to be profitable.[6] A

[6] L. J. Norton, *Business Policies of Country Grain Elevators*, Illinois Bulletin 477, 1941.

Kansas study found that even with considerable side-line business, elevators handling less than 250,000 bushels required a margin of 4.6 cents a bushel to break even, while those handling more than 250,000 required 3.6 cents (1945–1948).[7] In this same study, 50 percent of the elevators studied handled less than 250,000 bushels. An Indiana study found that elevators with a sales volume under $125,000 had a net profit of 2.6 percent of sales while those with a volume of over $375,000 had a net profit of 4.1 percent of sales.[8]

Increased volume for an elevator can be obtained in two principal ways. One is to add other business lines to that of grain handling. The other is to consolidate elevators so as to obtain a larger trade area. The great majority of elevators have taken on various side-line enterprises to boost their volume and offset the highly seasonal nature of their grain operations. For many elevators the word "side-line" is not appropriate, as the income from the other enterprises may equal or surpass that received from the handling of grain alone. The most common side-line is the feed business. In addition, coal, seeds, implements, building materials, petroleum, and farm supplies are common sales departments. In some communities the elevator is not only the outlet for grain, but also the principal source of general farm supplies.

Increased volume can be obtained by the consolidation of existing elevators. Much of the present locational pattern was established back in the era of horse-drawn transportation, poor roads, and poor communication. The supply area of many elevators is small. In Indiana, half of the total business of the large majority of the elevators was obtained from a radius of less than ten miles.[9] In Illinois the territory served varied from forty-three to seventy-one square miles, and within this area there were from three to six competitors.[10] As is the case in other considerations, the number of firms which will provide an adequate volume for low cost operation must be balanced against the industry structure which will assure effective competition. The modern farmer, however, with his telephone, daily newspaper, and radio, has a communication network which covers a larger area than was available to his grandfather. With his truck he can sell his grain over a wider area. Some reasonable consolidation seems possible without sacrificing an effectively competitive situation.

Most country elevator operators sell their grain to firms located at a terminal market and ship it to the designated terminal elevators. Grain

[7] E. B. Ballow, *Margins and Costs in Cooperative Grain Marketing in Kansas*, USDA, Farm Credit Administration, Bulletin 66, 1951.

[8] E. G. Byer, G. B. Wood, and G. S. Abshier, *A Financial and Business Analysis of Indiana Grain Elevators*, Indiana Bulletin 547, 1950.

[9] *Ibid.*

[10] Norton, *op. cit.*

may be consigned to commission merchants on the market for sale or it may be sold on "to-arrive" or "on-track" bids. If the grain is consigned to commission merchants, the elevator ships the grain to the terminal and takes the price secured by the commission merchant much the same as with the use of livestock commission men in the livestock yards. In selling on a "to-arrive" basis, the price, along with shipment details, is agreed upon in advance of delivery. When sold "on-track, country point," the price is agreed upon for grain in cars at the local elevator. The buyer of the grain takes title to the grain at the country elevator, and arranges and pays for the cost of transportation.

*Cash Grain Commission Merchants*

The representative of the country elevator operator in the terminal market is the cash grain commission merchant. For a fixed charge, the cash grain merchant will accept the responsibility of selling the grain. The principal job of the commission merchant is to oversee the grading of the grain and to seek out the interested buyers. Since these merchants on most markets must all charge the same commission, they compete for grain consignments on the basis of service which they can render to the elevator operator. They specialize in the analysis of market information for their clients. They also take charge of any arrangements which must be made with the buyer of the grain.

The commission merchant also handles the grain sold "on-track" or "to-arrive." In handling the "on-track" and "to-arrive" sales, the merchants make a practice of sending out bids to the elevator operators at the close of the market day. In many cases, this is in the form of postal card bids; in others, private wire and telephone are used to contact the local elevator.

In soybean marketing, the interior carlot dealer is also an important intermediary between the country elevator and the soybean processor. Unlike the commission merchant, the carlot dealer takes title to the soybeans. However, he does not take physical possession of the soybeans, but merely directs their movement to the processor.

*Terminal Elevators*

Terminal elevators furnish the large storage reservoirs necessary in the grain marketing channel. The capacity of these large elevators ranges from 300,000 bushels to more than 10,000,000 bushels.[11] Besides furnishing storage, the operators of terminal elevators condition the grain for storage and prepare it for future sale.

Operators of terminal elevators may be grain dealers or merchants

[11] Mallott, *op. cit.*, p. 154.

who buy grain for storage and later sell to millers and processors. Or the operators may merely run the elevator and store and process the grain for others for a fee. In still other cases, the large millers and processors may own and operate their own terminal elevator facilities.

Terminal elevators are one of the principal groups which utilize the futures markets for hedging. Very few country elevator operators hedge their holdings. The country elevator operators often sell their grain almost immediately upon purchase by utilizing "to-arrive" and "on-track" bids. Under such circumstances, they quickly shift the price risk to their buyers. On the other hand, terminal operators often hold grain for considerable periods of time. These operators are small-margin, large-volume handlers, and price fluctuations might easily turn profits into losses. Therefore, hedging insurance is very desirable.

*Processors and Millers*

Since the uses to which grains are put are many, the buyers of grain differ widely in their wants and desires. Flour millers desire wheat of a specific gluten or protein content, depending upon whether they are producing bread or cake flours. The grains desired for breakfast foods may differ. Corn processors and maltsters look for special characteristics.

Some processors maintain their own buyers on large terminal markets and purchase their supplies from the cash grain commission merchants. Others may retain the services of brokers who buy grain wherever it can be obtained. Still others have built up their own large country buying operations and operate line elevators in the grain belt itself. In this latter situation they not only protect their supply position but also control the handling and moving of grain throughout the marketing channel.

## GRAIN GRADING

The use of federal standards is mandatory for the grading of any grain which moves in interstate commerce. Because of the national nature of the grain market, this means that the great bulk of commercial grain is at some time in the marketing channel graded according to federal standards.

Whenever grain arrives in a large terminal market, a sample is drawn and graded. Grain grades range from the highest grade, Number 1, down through Number 5 and sample grade. There is also a division into classes and subclasses for each kind of grain. For example, Class I of wheat consists of hard red spring wheat. This is further divided into the subclasses of Dark Northern Spring, Northern Spring, and Red Spring. Within each class, the requirements for the various grades are set up.

Though the factors considered in grades differ somewhat from one grain to another, generally the following are used to determine the grade of a given class of grain:

1. A minimum test weight per bushel which is used as an indication of the plumpness of the kernel.
2. A maximum moisture content.
3. A maximum amount of foreign material and cracked kernels.
4. A maximum amount of damaged kernels.

An example of the grade requirements for the three classes of corn (yellow, white, and mixed) is shown in Table 3.

TABLE 3. *Grade Requirements for Yellow, White, and Mixed Corn*

| GRADE | MINIMUM TEST WEIGHT PER BUSHEL | MAXIMUM LIMITS OF | | | |
|---|---|---|---|---|---|
| | | MOISTURE | CRACKED CORN AND FOREIGN MATERIAL | DAMAGED KERNELS | |
| | | | | TOTAL | HEAT DAMAGE |
| | POUNDS | PERCENT | | | |
| Number 1 | 54 | 14.0 | 2 | 3 | 0.1 |
| 2 | 53 | 15.5 | 3 | 5 | 0.2 |
| 3 | 51 | 17.5 | 4 | 7 | 0.5 |
| 4 | 48 | 20.0 | 5 | 10 | 1.0 |
| 5 | 44 | 23.0 | 7 | 15 | 3.0 |
| Sample grade: any grain which does not meet the requirements of the above five grades | | | | | |

SOURCE: *Handbook of Official Grain Standards of the United States*, USDA, 1947.

Failure to meet any one of the above requirements will reduce the grade. For example, if corn met all of the requirements for grade Number 1 but had 0.2 percent heat damage, it would go as Number 2 grain. This variation possible within a given grade explains why different carloads of the same grade of grain sell at slightly different prices at the same location and instant of time. As mentioned earlier, the different processors have different requirements for their needs. In the above example, one processor who was not particular about the damage but watched moisture content carefully might pay more for that particular carload than another carload of Number 2 corn which had 15 percent moisture. Also, some processors may be watching for certain factors, such as protein content in wheat, which have not yet been incorporated into official grading standards.

Since the grade of grain is determined by a combination of different

factors, each of which can vary within limits, handlers can mix or blend grain in order to raise the grade. For example, suppose two loads of grain were received. One was graded Number 2 because of its moisture content, but it met all other requirements of Number 1 grain. The other load was graded Number 3 because of excessive cracked kernels and foreign material but in all other aspects it met the requirements for Number 2 grain. Through the proper mixing or blendings of these two loads of Number 2 and Number 3 grain, it might be possible to secure two loads (or nearly so) of grain which would grade Number 2. This would be possible because one load was low in the grade factors in which the other load was high. Country elevators sometimes blend grain, and terminal elevators usually do.

## THE STORAGE OF GRAIN

One of the principal marketing problems of the grain producer is to find the answer to the question of whether to sell at harvest time or to store for sale at a later date. If it is decided to store the grain, the next question is where it should be stored.

In answering the question of whether to store, the farmer must balance the costs of storing the grain against the possible gains from a rise in price later in the season. Two factors besides the normal seasonal price rise must be considered. One of these is the possibility of taking advantage of the government price support programs. The nonrecourse loan removes much of the uncertainty about the relationship of the current to a possible future price. If the market price of grain at harvest time is enough below the available loan rate to offset storage costs, certainly there is very little to lose and much to gain by storing under government loan. The other consideration is the outlook for the general movement of prices during the storage period. The average seasonal pattern of price variation can be expected to materialize only if the general price level does not change violently in one direction or another. If the general price level is expected to move downward, sales at harvest may be much more attractive to the producer than if the general level is expected to move upward.

Determining the cost of grain storage is merely the particularized application of the generalized cost factors referred to in Chapter 13. There are certain fixed costs which must be met whether grain is stored or not. These include the depreciation, maintenance, insurance, taxes, and interest on the capital invested in the available storage facilities and equipment. Then there are several variable costs which will occur only if grain is stored. These will include the costs of shrinkage and loss from damage, insurance and taxes on the grain, any expense of treating or conditioning the grain, and the cost of the labor and transportation expenses due to the

storage operation. Against these costs of farm storage must be weighed the cost of hiring the country elevator to store the grain.

Several studies have reached the general conclusion that it is usually less costly to hire storage in commercial elevators than to store on the farm.[12] All studies, however, point out the exceptions which may exist to the general rule. If farm storage capacity exists which would otherwise remain unused, then this conclusion may have to be modified. If the grain is to be used later on as feed, the assurance of having a safe supply might outweigh the other cost considerations. Several of these studies have calculated the dollar-and-cents cost of storage. However, these costs vary so much under different conditions that any generalization about actual costs has little validity.

Grain is a good illustration of the fact that storage may be done more efficiently at some levels in the marketing channel than in others. Very little grain is stored by country elevators for their own account. Once grain is sold by farmers it is quickly moved forward in the channel and the major storage operation occurs at the terminal elevator level. Here the low cost possibilities of large-scale handling by experienced operators can best be realized. However, it must be recognized that the price support program has encouraged more storage in the production area and in the majority of the cases on the farm of the producer.

## COUNTRY GRAIN BUYING

Elevator operators must buy their grain from producers in such a manner that when they sell it they have an adequate margin to cover their costs and result in some net return. Margins taken by elevators vary widely. Stokes arrived at a realized weighted average margin for wheat, oats, corn, rye, and barley of about 4 cents per bushel in 1939.[13] An analysis of Illinois elevators for 1949–1950 found the medium gross margin to be 3.4 cents for oats, 3.9 cents for corn, 4.6 cents for wheat, and 6.3 cents for soybeans. The variation among elevators was great, however. For example, a few firms realized a gross margin of less than 2 cents and a few of more than 10 cents on corn.

[12] T. E. Hall, A. L. Larson, H. S. Whitney, and C. H. Meyer, *Where and How Much Cash Grain Storage for Oklahoma Farmers*, USDA, Farm Credit Administration, Bulletin 58; T. E. Hall, P. V. Hemphill, C. H. Meyer, and W. K. Davis, *Where and Mow Much Cash Grain for North Dakota Farmers*, USDA, Farm Credit Administration, Bulletin 61; T. E. Hall, J. W. Hicks, W. K. Davis, and N. Coats, *Where and How Much Cash Grain Storage for Indiana Farmers*, USDA, Farm Credit Administration, Bulletin 68; A. M. Rollefson, D. B. Agnew, and C. H. Keirstead, *Improving Soybean Marketing Through Farm Storage*, USDA, Agricultural Information Bulletin 57; T. E. Hall, *Changing Grain Storage Costs*, USDA, Farm Credit Administration, Circular C-151, 1953.

[13] Stokes, *op. cit.*

Prices realized by farmers for their grain is a combination of the quoted price of the elevator plus the grade of grain delivered. Elevators sell grain on the basis of official federal grades, but buy very little on that basis from farmers. Instead, each elevator operator devises his own system of dockage—usually based on weight and moisture. Some elevators have been known to follow a system of high quoted prices plus a heavy dockage program. Others have used underdocking and overgrading instead of price as a competitive weapon.[14] (This, of course, is very similar to the difference in sorting methods used by livestock buyers.)

Farmers, as in choosing their livestock outlet, must evaluate both quoted prices and buying practices before selling their grain. Once an outlet is chosen, the farmer cannot rest assured it will remain the most advantageous. A study of the prices paid by sixty-four elevators in Indiana for soybeans found that on October 3, 1951, the prices paid varied from $2.47 to $2.67—a range of 20 cents. Two weeks later the same elevators were paying prices ranging from $2.60 to $2.69—a range of only 9 cents.[15] This meant that prices at some elevators had increased more than at others during that two-week period. Grain marketing has often been used as an example of efficiency and active competition. It is increasingly evident that many of these claims have been founded more on fiction than fact.

[14] R. J. Mutti, C. P. Schumaier, and L. F. Stice, *Business Analysis of Illinois*, 1949, processed.

[15] D. E. Meyers, *Factors Causing Soybean Price Variation Among Indiana Elevators*, unpublished thesis, Purdue University, 1953.

CHAPTER NINETEEN

# Cotton Marketing[1]

## THE PRODUCT AND ITS USE

### *United States Production*

Cotton continues as king of crops in the South after undergoing several changes of fortune. Farmers in eight states receive more cash from the sale of cotton than from any other farm enterprise. In addition, farmers in four other states receive more cash from marketing cotton than from any other crop planted in that state. Most of these states are located in the southern portion of the United States extending from North Carolina to California. The areas of heaviest production are the Mississippi Delta, the Black Prairies and Great Plains of Texas, the valleys of North Alabama, and the upper Piedmont areas of Georgia, North Carolina, and South Carolina (Figure 1).

Prior to 1914, acreage and production increased steadily. In 1914 a total of over 36 million acres was planted to cotton. But with the coming of the boll weevil, acreages and yields declined and adjustments to this menace were necessary. From a low point of less than 30 million acres in 1921, the acreage planted to cotton increased to reach the all-time peak of nearly 46 million acres planted in 1925. In the ensuing years acreages were reduced as a result of continuing low prices and acreage allotment programs which were in effect from 1934 to 1943 with the exception of 1937. The low point in acreage planted to cotton was reached in 1945 when only about 17.5 million acres were under cultivation.

The yield per harvested acre of cotton showed a slight upward trend during the years 1866 to 1915 with most annual yields ranging between 160 and 200 pounds per acre. In the period of severe boll weevil infestation that followed, yields were sharply lower. The former level was regained

[1] This chapter and the one following, "Tobacco Marketing," have been contributed by Dr. C. B. Cox, Associate Professor of Agricultural Economics, Purdue University, formerly with Department of Agricultural Economics, Alabama Polytechnic Institute, Auburn, Alabama.

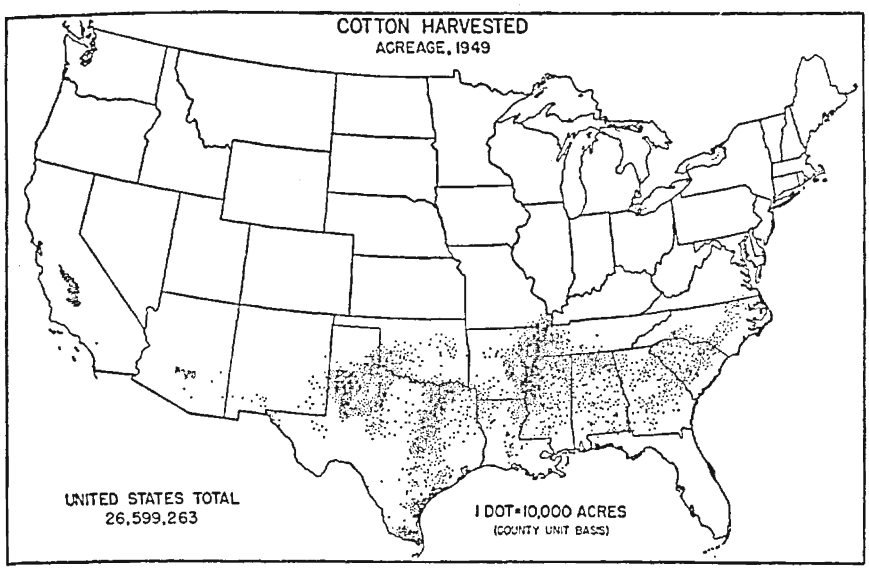



FIGURE 1. *Geographic location of cotton production in the United States. (Courtesy U.S. Dept. Com.)*

between 1931 and 1936. With the 270 pounds in 1937, a new era of yields began starting a sharp upward trend that reached 311 pounds per acre in 1948. In recent years the smaller acreages in cotton have been accompanied by higher fertilization and a larger proportion grown on better adapted lands. With these, production has remained relatively constant, fluctuating with weather and control programs.

Most of the cotton is produced on relatively small farms. About a fourth of the farms producing cotton in 1949 harvested five acres or less (Table 1). Another 40 percent harvested between six and fourteen acres and less than 10 percent of the farms producing cotton harvested fifty acres or more. This meant that most of the farmers must sell in relatively

TABLE 1. *Percentage of Farms Growing Cotton Reporting Various Acreages of Cotton Harvested in 1949*

| COTTON HARVESTED ACRES | PERCENT OF FARMS |
|---|---|
| 5 or less | 23.3 |
| 6–14 | 39.8 |
| 15–49 | 27.5 |
| 50–199 | 7.8 |
| 200–499 | 1.3 |
| 500 and over | .3 |

SOURCE: United States Census, 1950.

small lots. About 40 percent of the farms growing cotton produced three bales or less in 1949 (Table 2). One-third produced between four and nine bales and only 10 percent produced over twenty-five bales.

TABLE 2. *Percentage of Farms Growing Cotton Reporting Various Numbers of Bales Produced in 1949*

| BALES PRODUCED | PERCENT OF FARMS |
|---|---|
| 3 or less | 39 |
| 4–9 | 33 |
| 10–24 | 18 |
| 25–49 | 5 |
| 50 and over | 5 |

Computed from United States Census, 1950

*Cotton Standards*

Cotton is classed according to grade and staple length. Cotton classification is technical and most cotton farmers are unable to determine accurately the official quality. Many local buyers are not trained buyers and estimate the classification. The official standards for grades of American upland cotton are given in Table 3.

TABLE 3. *Official Standards for Grade of American Upland Cotton*

| GRAY | EXTRA WHITE | WHITE | SPOTTED | TINGED | YELLOW STAINED |
|---|---|---|---|---|---|
| | | No. 1, or Middling Fair | | | |
| | | No. 2, or Strict Good Middling | | | |
| GMG | GMEW | No. 3, or Good Middling | GMSp | GMT | GMYS |
| SMG | SMEW | No. 4, or Strict Middling | SMSp | SMT | SMYS |
| MG | MEW | No. 5, or Middling | MSp | MT | MYS |
| | SLMEW | No. 6, or Strict Low Middling | SLMSp | SLMT | |
| | LMEW | No. 7, or Low Middling | LMSp | LMSp | |
| | SGOEW | No. 8, or Strict Good Ordinary | | | |
| | GOEW | No. 9, or Good Ordinary | | | |

(B) STAPLE LENGTH IN INCHES *

| UPLAND SHORT STAPLE | | LONG STAPLE OR STAPLE COTTON | |
|---|---|---|---|
| $\frac{3}{4}$ | $\frac{31}{32}$ | $1\frac{1}{8}$ | $1\frac{9}{32}$ |
| $\frac{13}{16}$ | 1 | $1\frac{5}{32}$ | $1\frac{5}{16}$ |
| $\frac{7}{8}$ | $1\frac{1}{32}$ | $1\frac{3}{16}$ | $1\frac{11}{32}$ |
| $\frac{29}{32}$ | $1\frac{1}{16}$ | $1\frac{7}{32}$ | $1\frac{3}{8}$ |
| $\frac{15}{16}$ | $1\frac{3}{32}$ | $1\frac{1}{4}$ | $1\frac{1}{2}$ |

* Short staple cotton is cotton $1\frac{3}{32}$ inches and shorter. Long staple cotton is cotton $1\frac{1}{8}$ inches and longer.

The Smith-Doxey Act and the Cotton Grade and Staple Statistics Act were passed to provide cotton classification service to producers. This classification service is provided free to producers in certain communities. In 1949 about one-half of the crop was included in the program.

*Consumption of All Fibers*

Per capita consumption of all fiber in the United States has beeen more than a third higher during and after the years of World War II than in the prewar period (Figure 2). The shift was due primarily to a high level of

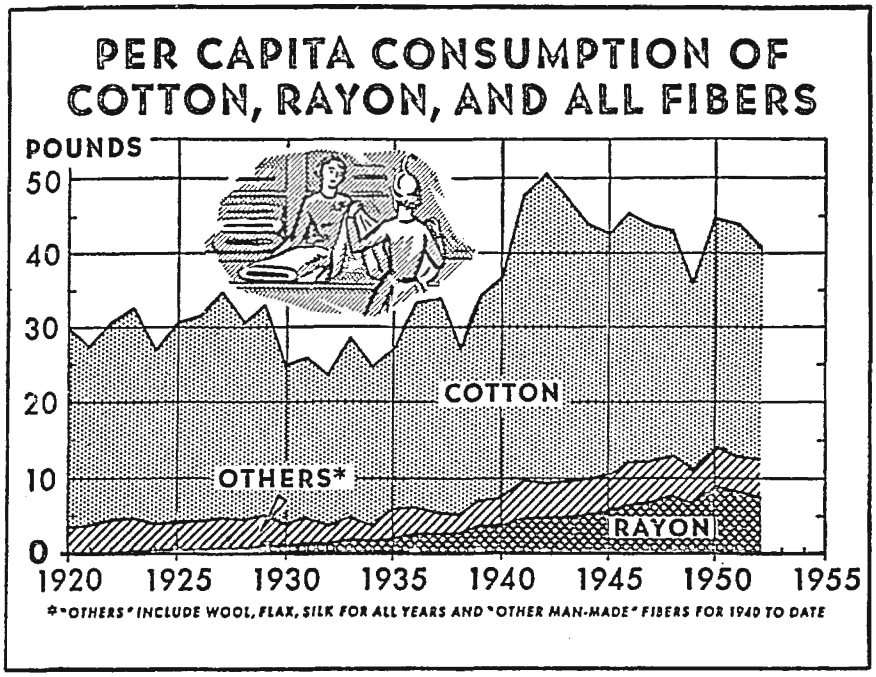



FIGURE 2. *The consumption of different fibers in the United States. (Courtesy USDA.)*

economic activity. Consumption of cotton has increased almost 20 percent and rayon consumption has almost tripled. Consumption of other fibers has increase slightly primarily because of a rise in the consumption of noncellulose synthetics. The per capita consumption of cotton during the five-year period of 1948–1952 was approximately 29 pounds. Cotton made up approximately 70 percent of the fibers consumed. This percentage has been declining since 1913 primarily because of the increased consumption of other fibers rather than a decline in the actual consumption of cotton. Rayon consumption per capita reached 1 pound per year in 1929 and had

increased to a little over 7 pounds during the five-year period of 1948–1952. Rayon and acetate fibers now account for about 18 percent of the fibers consumed in the United States. The consumption of wool has fluctuated during the period 1913–1952 from a low of 1.79 pounds per capita in 1934 to a high of 5.14 pounds in 1946. Per capita consumption during the five-year period 1948–1952 was less than 4 pounds and accounted for slightly over 8 percent of the fibers consumed. The per capita consumption of silk and flax has declined with the introduction of other synthetic fibers. Flax and silk combined now account for about 0.3 percent of the fibers consumed, while other synthetics account for about 4 percent of the fibers consumed.

No area of the world even approaches the per capita level of fiber consumption which prevails in the United States.[2] Europe consumed about 38 percent as much cotton and other fibers per capita as the United States in 1951. Africa consumed about 8 percent and Asia consumed about 9 percent as much as the United States (Table 4). An increase in cotton consumption of one-half pound per person in all foreign countries would increase world consumption 2.3 million bales. The total cotton consumption outside the United States is now only about equal to consumption in 1938 despite a population increase of about 300 million persons.

TABLE 4. *Per Capita Consumption of Fibers, Specified Locations, 1938, 1949–51*

| LOCATION | 1938 | 1949 | 1950 | 1951 |
|---|---|---|---|---|
| | | POUNDS | | |
| Europe | 13.7 | 14.1 | 15.7 | 16.1 |
| Asia | 4.9 | 3.5 | 3.3 | 3.7 |
| Africa | 2.9 | 3.3 | 3.3 | 3.5 |
| Others | 9.0 | 8.4 | 8.8 | 9.0 |
| All foreign locations | 7.1 | 6.2 | 6.4 | 6.8 |
| United States | 26.8 | 35.3 | 43.3 | 42.3 |
| World | 8.2 | 7.9 | 8.6 | 9.0 |

Computed from reports of the F.A.O., USDA.

*Utilization of Cotton*[3]

Most cotton moves to the mills in bales. At the mills the bales are opened and the cotton is cleaned, carded, combed (for fine yarns), and

[2] For a detailed discussion of foreign consumption see the statement by Frank Lowenstein, Agricultural Economist, before the Senate Committee on Agriculture and Forestry, April 24, 1953.

[3] L. D. Howell, "Marketing and Manufacturing Services and Margins for Textiles," USDA Technical Bulletin 1062, 1952.

spun into yarn. On the average, about 4 percent of the gross weight of the bale usually is discarded as tare (bagging and ties), about 7 percent usually is removed as nonspinnable waste, and most of the remainder, which amounts to about 89 percent, is made into yarn (Figure 3). According to census reports for 1947, for example, about 75 percent of the yarn was woven into cloth, 9 percent went to the knit-goods industry, 9 percent was used in tire cords, and the remainder was used in making thread, carpets, cordage, twine, and other products.

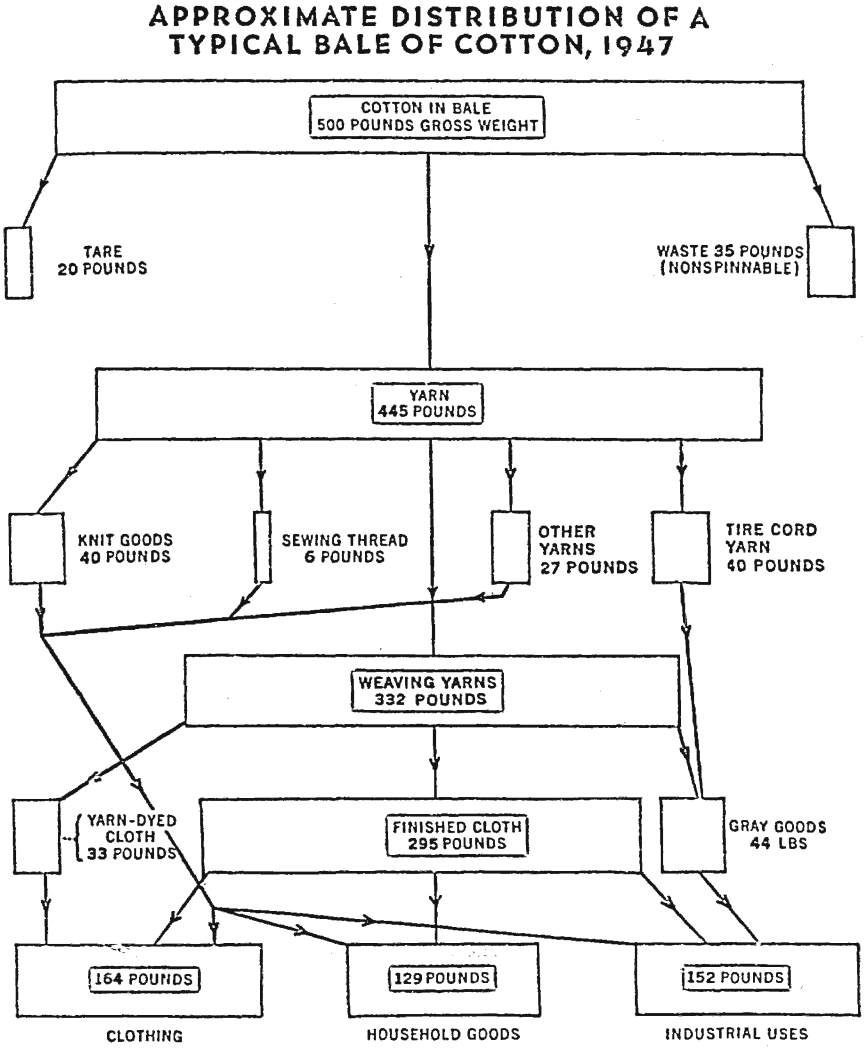



FIGURE 3. *The distribution of a bale of cotton showing the amounts of different products which are produced. (Courtesy USDA.)*

Census reports indicate that in 1947, about 19 percent of the woven cotton cloth was used in the unfinished form, about 10 percent was colored yarn fabrics, and about 71 percent was finished from the gray. Finishing gray goods includes bleaching, dyeing, and printing. Of the total linear yardage finished in 1947, for example, about 52 percent was bleached and white-finished, 25 percent was plain dyed and finished, and 23 percent was printed and finished. In 1949 the corresponding proportions were 45, 31, and 24 percent, respectively. Style and finish of a large part of the cotton cloth are controlled by converters, but substantial proportions are controlled by mills, with or without the collaboration of the manufacturing user.

A large proportion of the finished cloth usually goes to cutters where it is made into wearing apparel and household goods. Estimates based on incomplete data indicate that of the total output of cotton manufactured in the United States during recent years, about 37 percent went into apparel, about 34 percent into industrial uses, and about 29 percent into household textiles. Clothing and household textiles usually go directly or indirectly through wholesalers, jobbers, or other agencies to retailers and finally to ultimate consumers.

## LOCATION OF MILLING

The average mill consumption of cotton during the period of 1948–1952 was slightly over 9 million bales (Table 5). Mill consumption was fairly stable during the period of 1920–1939, then increased sharply, reaching a peak of over 11 million bales in 1941; afterward it remained relatively constant from 1943 through 1952 at about 9 million bales.

TABLE 5. *Cotton Mill Consumption and Percentage of Total Consumption by Geographic Areas for Selected Periods*

| YEARS BEGINNING AUGUST 1 | TOTAL UNITED STATES MILL CONSUMPTION | MILL CONSUMPTION | | |
|---|---|---|---|---|
| | | COTTON GROWING STATES | NEW ENGLAND | OTHERS |
| | 1,000 BALES | PERCENT OF TOTAL | | |
| 1920–24 | 5,869 | 65 | 29 | 6 |
| 1930–34 | 5,465 | 81 | 16 | 3 |
| 1940–44 | 10,301 | 87 | 10 | 3 |
| 1948–52 | 9,162 | 91 | 7 | 2 |

SOURCE: *The Cotton Situation*, USDA, B.A.E., August, 1953.

Most of the cotton is manufactured into the cotton products within the cotton growing states. Mills in the cotton growing states have tended to account for an increasing proportion of domestic cotton consumption for many years. In the 1952–1953 marketing year, about 93 percent of domestic cotton was milled in the cotton growing states compared with 65 percent in 1920–1924. At the same time, the proportion of cotton consumed by mills in the New England states has declined steadily. In the 1952–1953 season it was 6 percent while in 1920–1924 it was 29 percent.

## MARKETING CHANNELS

### *Channels Used*

Taking cotton from farms and delivering it in the form of finished clothing and household textiles to ultimate consumers requires the services of many different types of middlemen, including handlers of raw cotton, manufacturers, and distributors of cotton products (Figure 4). These services begin when seed cotton is hauled from farms to gins. Gins perform services such as conditioning and cleaning of seed cotton, separating the lint from the seed, and packing and wrapping the lint into bales weighing approximately 500 pounds.

### *Local Markets* [4]

Almost the entire cotton crop is produced on farms located within a few miles of a market outlet for cotton. Some 2,500 of these producers' or local markets form a vast network of primary markets which dot the entire expanse of the cotton belt. Growers, with few exceptions, dispose of their cotton at these local markets.

Few local markets have a formal market organization set up specifically for cotton trading. Trading between producers and buyers usually is conducted on an informal basis with the producer selling his own cotton according to his desire to sell and his ability to bargain. A local market customarily serves a small community or trading area. Sales by growers averaged 6,784 bales per market in 1947, although individual markets varied widely in the volume of cotton handled.

The small volumes available and the relatively short duration of the active marketing period require most first-buyers either to engage in some related cotton activity or to have some other type of year-round business. During 1947, approximately 62 percent of sales by growers were made to buyers who reported other business activities. Ginning has been the major activity associated with cotton buying.

[4] For more details on marketing practices, see R. C. Soxman, "Marketing of Cotton in Producer's Local Markets," USDA, P.M.A., processed, 1949.

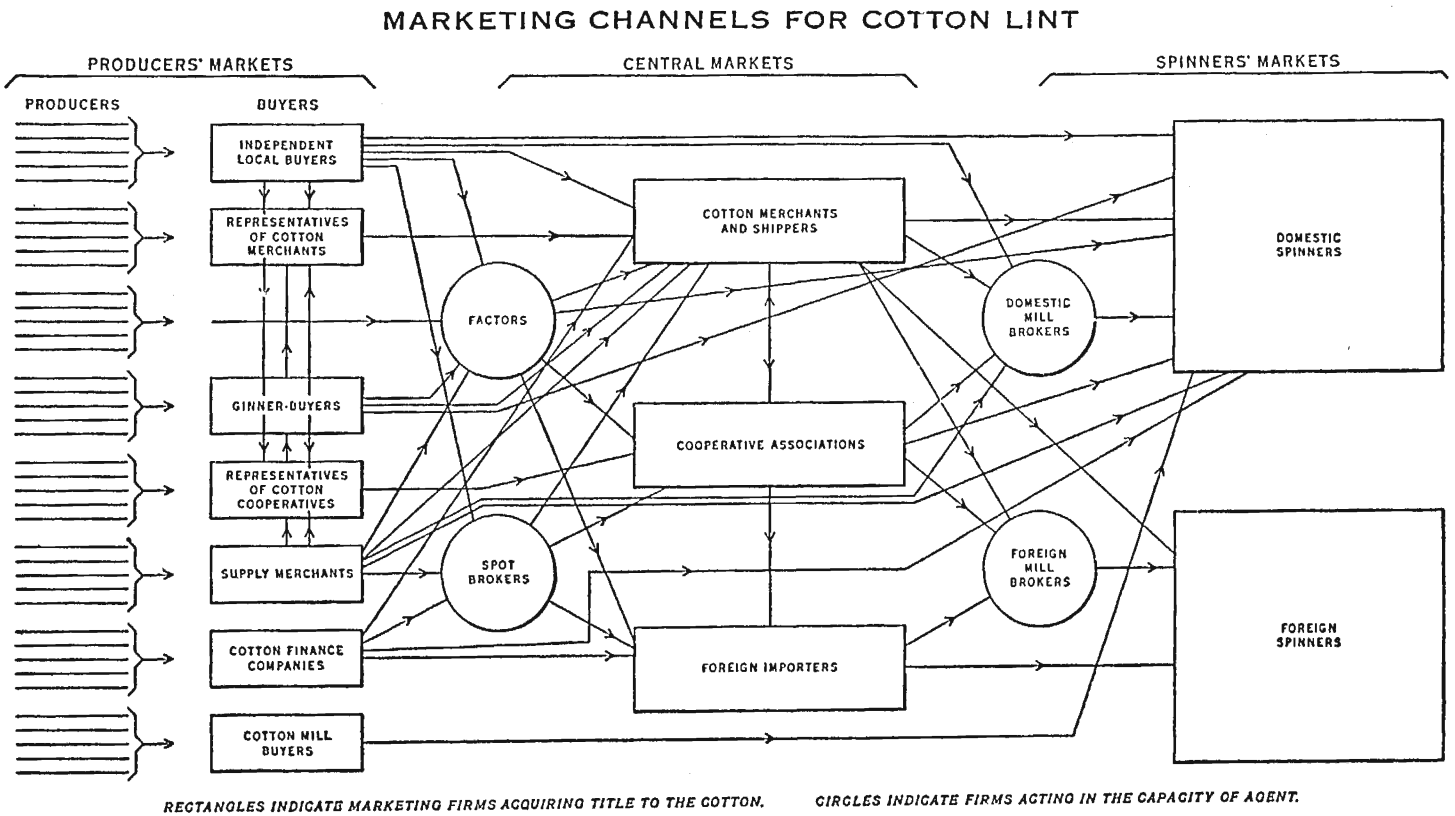



FIGURE 4. *Marketing channels for cotton lint. (Courtesy USDA.)*

*Central Markets* [5]

A relatively small number of spot cotton markets situated at strategic locations throughout the cotton belt exercise a dominant role in the marketing of American raw cotton. These major centers are called central spot cotton markets and have large-scale facilities for storing and concentrating cotton. Trading in most of these markets is carried on according to rules of the local cotton exchange. Each market has a fairly well-defined trading territory.

Central markets such as Houston, New Orleans, and Galveston are deep-water ports and form the gateway through which American cotton moves to overseas markets. Others, including Memphis, Dallas, Greenwood, Little Rock, Augusta, and Montgomery, are interior markets located strategically with respect to important areas of production and inland lines of transportation to mills or ports.

For a number of years, Memphis has been the leading central cash cotton market. Markets next in order of volume of sales are Dallas, Houston, and New Orleans, respectively. These four largest markets usually handle slightly more than one-half of total cotton production.

The three principal buying agencies in these markets are cotton merchants, mill buyers, and cotton brokers. Cotton merchants acquire the bulk of their stocks by purchases made in local markets, usually from ginners and other local buyers. In a study of five central markets it was found that merchants secured about 22 percent of their cotton from producers, 27 percent from ginners, 18 percent from other first buyers, slightly less than 7 percent from other merchants, 20 percent through brokers, and the remainder from varied sources. Mill buying agencies followed the same general pattern as did merchants in buying chiefly at local markets. More than three-fourths of the purchases were made at country markets.

Sales made by spot brokers were chiefly for producers or various types of first buyers. About 37 percent of sales by brokers were made for producers, approximately 52 percent for ginners and other local buyers, only about 9 percent for merchants, and the remainder for cooperatives and others.

Merchants normally attempt to avoid all possible risk of adverse price movements. Merchants sell some purchases immediately, but almost all unsold purchases are hedged by the sale of future contracts. Mill buying agencies usually purchase for the account of certain mills or have established outlets for immediate sale.

[5] Adapted from R. C. Soxman and A. L. Roberts, "Marketing Practices at Central Spot Cotton Markets," USDA, P.M.A., processed, 1948.

## MARKETING MARGINS[6]

The farmer receives a small portion of the consumer's dollar paid for finished cotton products. Data relating to the retail value of forty-two cotton articles of clothing and household furnishings and to farm values of equivalent quantities of cotton indicate that from 1927 to 1950 farm producers received an average of 10.6 percent of the consumer's dollar. The portion of the consumer's dollar represented by the farm value of the cotton usually varied directly with the price of cotton. It ranged from about 5 percent in 1932, when farm prices of cotton averaged about 6 cents a pound, to 14 percent in 1950, when farm prices of cotton averaged about 40 cents a pound.

Gross marketing margins for cotton include the costs or charges made for taking seed cotton to the gins, having it ginned and baled, delivering the bales to mills at the desired time, manufacturing the cotton into cotton goods, distributing the goods and selling to the ultimate consumer.

The fact that, on the average, almost 90 percent of each dollar paid by consumers for finished cotton goods is accounted for by marketing margins emphasizes the importance of these margins.

### *Margins Included in Farm Prices*

Farm prices are those received by growers, usually in farmers' local markets. They apply to cotton after it has been hauled to the gin, ginned, and the lint cotton packed and wrapped in bales of about 500 pounds. Costs of this hauling, ginning, and baling are paid by the producer and are included in farm prices.

Cotton usually is hauled from farms to gins by farm producers, although some is hauled by ginners and commercial truckers. The portion of the crop that is hauled to gins by producers varies between 80 and 90 percent. Commercial truckers haul most of the balance, with ginners hauling a small percentage.

Most of the seed cotton produced in the United States is ginned before it is sold by the farm producers. During recent years only about 2 or 3 percent of the crop in the United States was sold as seed cotton and a substantial proportion of this was made up of remnants harvested toward the end of the harvesting season. But in other major cotton-producing countries, large proportions of the cotton are sold by farm producers before it is ginned.[7]

[6] Howell, *op. cit.*

[7] In Egypt and India, for example, most of the cotton produced is sold by growers before it is ginned, and in Brazil a large proportion of the cotton is sold in the seed. Apparently custom ginning is more highly developed or more generally practiced in the United States than in any other major cotton-producing country. Information as to

Charges for ginning vary considerably from year to year with changes in general business conditions, in prices of cotton, and in costs of bagging and ties. They vary also from one state or region to another with differences in kinds and amounts of services rendered. For the United States as a whole, average charges for ginning a 500-pound bale of American Upland Cotton, including charges for bagging and ties, ranged from 4.04 for the 1931 crop when farm prices of cotton averaged 5.66 cents per pound to $11.19 for the 1950 crop when farm prices averaged 40.07 cents a pound. The pro-

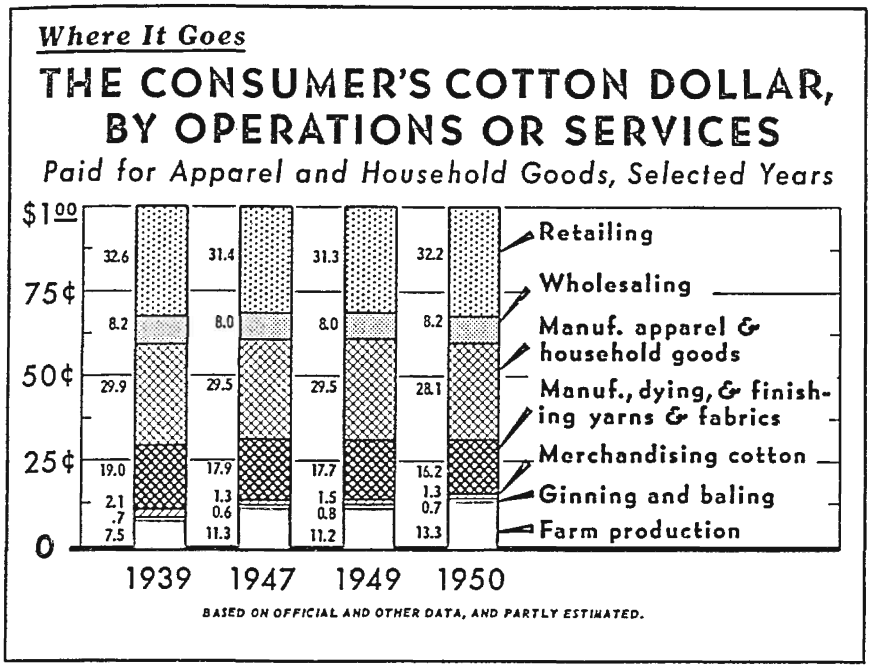



FIGURE 5. *The breakdown of the consumer's cotton dollar showing the proportion taken by various marketing operations and services. (Courtesy USDA.)*

portion of the farm value of the cotton accounted for by ginning charges ranged from 5 percent for the 1946 crop when farm prices averaged 32.64 cents a pound to 14 percent for the 1931 crop when farm prices averaged 5.66 cents a pound. For the 1950 crop, when farm prices averaged 40 cents a pound, this proportion averaged 5.6 percent. The portion of the consumer's dollar represented by ginning and baling has averaged less than one cent (Figure 5).

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cotton-selling practices in Egypt, India, and Brazil is based on observations by P. K. Norris, former marketing specialist, Bureau of Agricultural Economics, during his studies of production and marketing of cotton in these countries.

*Cotton Merchandisers' Margins*

Merchandisers' margins are the differences between farm prices of cotton and costs of the raw cotton to mills. These margins include the costs of taking the cotton from gins and delivering it to mills at the time, in the quantities, and of the qualities desired. These services include receiving, sampling, weighing, classifying, compressing, storing, insuring, transporting, financing, and risk-bearing, among others. These margins include payment for services performed by both local and central markets. This portion of the consumers' dollar spent for cotton products has varied from 2.1 percent in 1939 to 1.3 percent in 1950.

*Manufacturing Margins*

The manufacturing margins include the costs for spinning yarn, weaving cloth, and dyeing and finishing the fabrics; and for the manufacture of apparel and household textiles.

Different kinds of agencies engage in some of the same kinds of services. Consequently, the margins indicated for each type of service do not show specifically the charges made by each type of agency. Some textile manufacturers, for example, although they engage primarily in spinning and weaving, dye and finish some cloth, fabricate some of the cloth into household and other goods, and sell the products to wholesalers or retailers. The proportions of the consumer's dollar accounted for by average margins for cotton manufacturers who are primarily engaged in spinning, weaving, dyeing, and finishing cotton yarns and fabrics averaged 18.5 percent in 1950. Similar proportions for manufacturers of apparel and household goods averaged slightly more than 29 percent in 1950.

*Wholesale and Retail Margins*

Manufacturers of apparel and household textiles sell large quantities of their products directly to retailers. The costs of these selling services accounted for the fact that margins for these manufacturers are somewhat greater than total margins for manufacturing apparel and household goods. Regular wholesalers' margins, which amounted on the average to 4.9 percent of the retail price in 1939 and 1950 and to 4.8 percent in 1947 and 1949, were substantially less than the average margins for wholesaling because a large part of the wholesaling was done by agencies not primarily engaged in wholesaling. The proportion accounted for by retailing has averaged about 32 cents. Retailing, therefore, was the most expensive single operation or service. It will be recalled that this has been true for each commodity we have studied.

*Consumer's Cotton Dollar by Cost Items*

Available information indicates that salaries and wages account for more than half of the spread between retail prices of apparel and household goods made of cotton and returns to growers for the cotton used (Figure 6). The proportions of the consumer's dollar accounted for by wages and salaries ranged from 44 percent in 1947 to 48 percent in 1949. The propor-

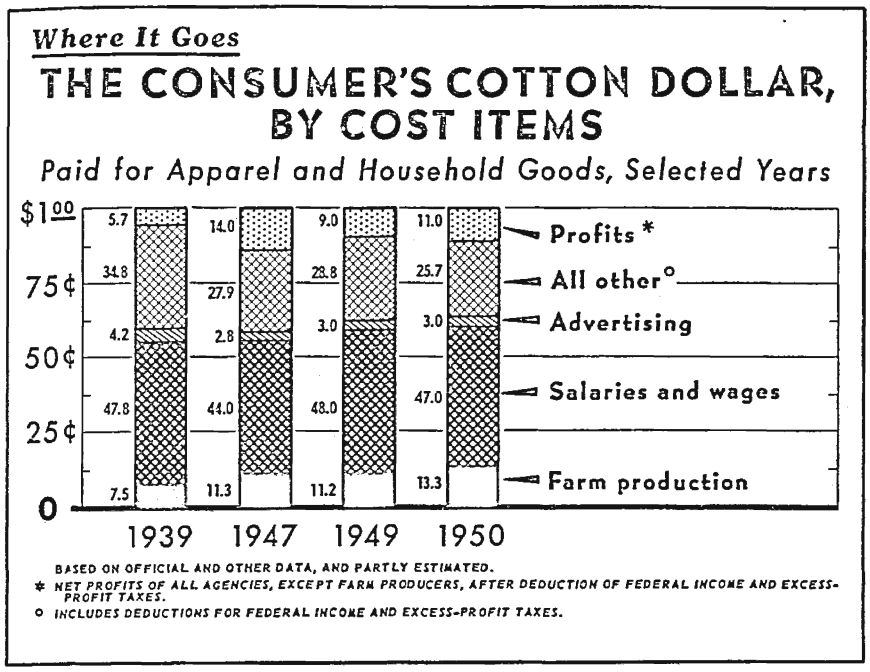


FIGURE 6. *The breakdown of the consumer's cotton dollar showing the proportion taken by various marketing cost items. (Courtesy USDA.)*

tions for net profits for all agencies combined ranged from 5.7 percent in 1939 to 14 percent in 1947, and averaged 11 percent in 1950. The proportions for advertising and for other items decreased markedly after 1939. Salaries and wages for employees engaged in marketing cotton and cotton products average more than four times as much, and net profits to marketing agencies average almost as much as returns to growers for farm production of the cotton.

These data relating to the distribution of the consumer's dollar paid for apparel and household goods made of cotton may serve to indicate the relative importance, from the viewpoint of costs, of increasing efficiency

and of reducing costs for the different agencies and functions involved. Data show that the margins for ginning and baling, combined with those for all the merchandising services involved in taking cotton from gins and delivering it to mills, amount, on the average, to only about 5 percent of the combined margins for manufacturing and finishing the cloth and for fabricating it into wearing apparel and household goods. They amount to only about 6 percent of the combined margins for wholesaling and retailing these products. Thus a reduction of only 3 percent in the margins for wholesale and retailing, or for manufacturing and finishing cloth and fabricating it into apparel and household goods, would tend to reduce the spread between retail prices to consumers and prices to growers for the cotton to a greater degree than would a 50 percent reduction in the margins for ginning, baling, and merchandising the raw cotton.

## MARKETING COTTONSEED[8]

Cottonseed usually ranks among the ten leading field crops in farm value in the United States and has been third in rank in the cotton belt. Since cottonseed is the less valuable member of the lint-seed crop, the production of seed is often influenced primarily by factors determining production of lint cotton. Cottonseed is processed into oil, cake or meal, linters, and hulls, all of which are important in the national economy.

The physical movement of cottonseed from farm to mill is characterized by directness and simplicity. Growers bring seed cotton to gins where the lint and seed are separated. The greater part of this seed, except that retained for planting and other farm uses, is sold immediately to ginners who usually sell promptly to processors.

As compared with many other agricultural products, cottonseed is very bulky in relation to weight. Cottonseed weighs about thirty-two pounds per bushel. This bulkiness creates relatively high costs in storing and transporting cottonseed and restricts its movement over long distances for processing. Processors, therefore, customarily are located in close proximity to the source of supply.

The quality of cottonseed often varies appreciably with location and season of harvest. Since such variations in quality can be measured only by highly technical chemical analyses, cottonseed normally is purchased by ginners without regard to the quality of individual lots of seed but is sold to the oil mills largely on the basis of quality.

Many methods are used to determine the weight of cottonseed being sold. Only a small part of the trading between the ginner and grower is

[8] For more details on the handling of cottonseed, see M. E. Whitten and J. H. Stevenson, *The Marketing of Cottonseed*, USDA, P.M.A., processed, 1949.

settled on the basis of weight determined by the use of scales specifically for weighing the cottonseed. Weights of the seed purchased by ginners are arrived at principally by estimation, the particular formula being a matter of local custom. Some gins use the method of calculating the seed cotton load minus the gross weight of the bale. Others use the seed cotton load weight minus the gross weight of the bale, minus a given number of pounds or percentage of the seed cotton load weight for waste. A few estimate the weight of the cottonseed by using a seed-lint ratio from the weight of the bale.

Prices posted by ginners relate indirectly to prices offered by processors because such prices apply to seed of whatever estimated quality currently is being received at a specific gin. Ginners normally calculate prices by subtracting a sufficient margin from existing mill prices to defray marketing expenses and allow a profit and then make a further price adjustment to compensate for any difference between the estimated quality of seed arriving at the gin and that of basis 100 grade seed. Mill prices for seed, however, do not always reflect changes in prices of products and gin prices do not always respond in a sensitive manner to fluctuations in mill prices. Since seed generally is purchased on the basis of estimated weight, and almost exclusively in terms of approximated qualities, there are many chances for error. Also, many ginners apparently maintain charges for ginning services at levels that place considerable emphasis on cottonseed purchases as the major source of income.

## FOREIGN PRODUCTION AND UNITED STATES EXPORTS

United States cotton exports reached an all-time peak in 1926. Thereafter the trend was reversed and continued downward through the 1930's while production abroad rose sharply (Figure 7). Interruptions of trade in the five years of 1940–1944 dropped exports to the lowest levels in almost seventy years but discouraged production in most foreign countries as well. Recovery of exports in postwar years has been helped by United States programs of foreign aid. Foreign production reached a peak of 20 million bales in 1937–1938 and declined to 12 million bales in 1945–1946. Since World War II the increase in foreign production has been at an average rate of more than a million bales a year. Foreign production has been stimulated by attractive prices.

Western Europe continues to be the destination of the greater part of the United States cotton exports, though to a lesser exent than before World War II. In Asia, the Republic of India, now the world's second largest cotton manufacturer, has been a net importer since the partition of the

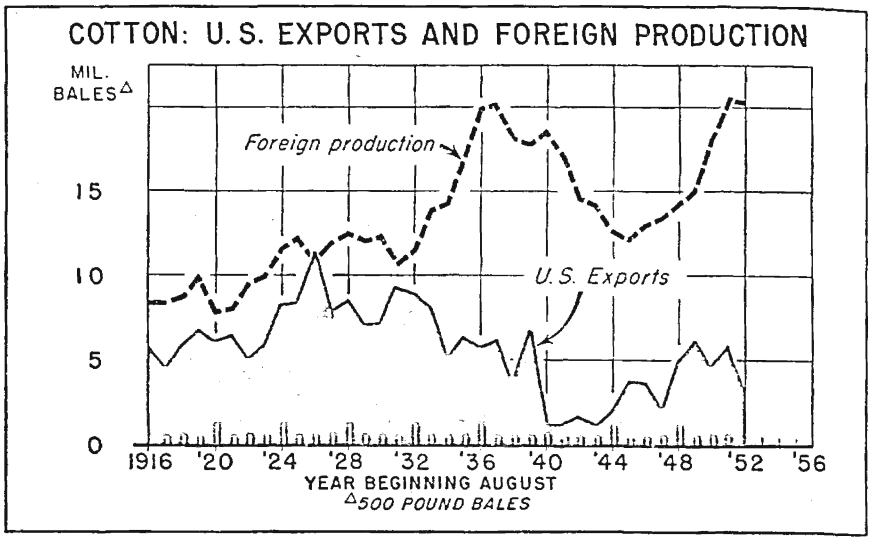


FIGURE 7. *Relationship of United States cotton exports to the volume of foreign cotton production. (Courtesy USDA.)*

subcontinent and is an important user of American cotton. Japan, however, with the postwar restoration of its cotton mills and partial recovery of its textile export trade, has regained its prewar position as the leading cotton customer of the United States.

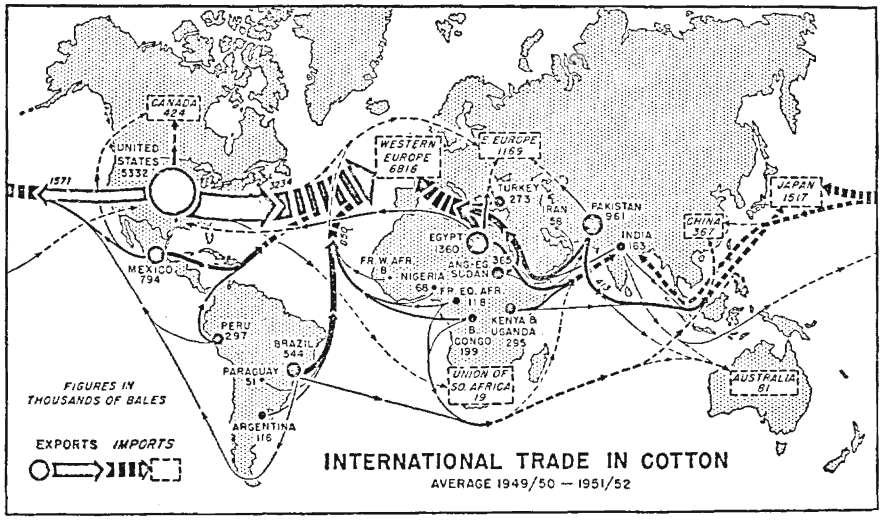


FIGURE 8. *International trade in cotton showing the relative importance of trade with various countries. (Courtesy USDA.)*

Before World War II the total volume of the world's cotton export trade approximated 13 million bales a year, of which the United States had more than 40 percent (Figure 8). Other principal exporters of American type cotton were Brazil and India. During World War II the international trade in cotton declined drastically. Recovery following World War II was slow until 1948–1949 when the European Recovery Program gave cotton trade a new emphasis, but the volume in trading still remains more than a million bales under the prewar yearly average.

## COTTON MARKETING PROBLEMS

### *Producer Knowledge of Grades*

The majority of producers must depend on outside sources for quality information. In 1947 the proportion of growers that knew neither grade nor staple was about 45 percent (Table 6).[9] From 99 to 100 percent of growers

TABLE 6. *Proportion of Growers Knowing Grade and Staple of Cotton Sold, 98 Selected Markets, Season 1947–48*

| LOCATION OF MARKETS (STATE) | GROWERS KNOWING BOTH GRADE AND STAPLE | GROWERS KNOWING GRADE ONLY | GROWERS KNOWING STAPLE ONLY | GROWERS KNOWING NEITHER GRADE NOR STAPLE | TOTAL |
|---|---|---|---|---|---|
| | PERCENT | | | | |
| Alabama | 50 | 9 | 1 | 40 | 100 |
| Arizona | 100 | – | – | — | 100 |
| Arkansas | 66 | – | – | 34 | 100 |
| California | 99 | – | – | 1 | 100 |
| Florida | — | 42 | – | 58 | 100 |
| Georgia | 44 | – | 1 | 55 | 100 |
| Louisiana | 32 | 6 | – | 62 | 100 |
| Mississippi | 38 | – | – | 62 | 100 |
| Missouri | 23 | – | – | 77 | 100 |
| New Mexico | 100 | – | – | — | 100 |
| North Carolina | 27 | – | 1 | 72 | 100 |
| Oklahoma | 47 | – | 1 | 52 | 100 |
| South Carolina | 9 | – | – | 91 | 100 |
| Tennessee | 9 | – | – | 91 | 100 |
| Texas | 71 | * | * | 29 | 100 |
| Virginia | 2 | – | – | 98 | 100 |
| All markets | 54 | 1 | * | 45 | 100 |

* Less than 0.5 percent.

at the markets in Arizona, California, and New Mexico had quality information at the time of sale. Two-thirds of the growers in Arkansas and

[9] Soxman, *op. cit.*

about three-fourths of those in Texas knew the quality of cotton being sold. In contrast, less than one-tenth of growers at markets in Florida, South Carolina, Tennessee, and Virginia was informed as to the grade and staple of their cotton.

Federal grading service is available to producers participating in improvement programs without any direct charge for the service. Growers marketing 46 percent of the total volume had documents at the time of sale such as reports from federal grading or licensed classers' certificates that indicated grade and staple. Approximately 28 percent of all sales (about three-fifths of the cotton so documented) were completed on the basis of such impartial quality information without buyers examining a sample.

*Producers Do Not Force Price Competition*

A great many growers do not attempt to obtain price bids from a number of buyers prior to selling. Sales made by growers after interviewing only one buyer accounted for 57 percent of sales in 1947.[10] Sales were made on the basis of bids from two buyers for only about one-fifth of the cotton sold. The remaining one-fourth of the cotton was sold after interviewing three or more buyers.

About one-half of the growers selected buyers who in their opinion offered the best price. A surprisingly large percentage of growers, however, indicated that custom, convenience, or confidence in the buyer determined their choice. Nearly two-fifths of the growers reported being largely influenced by this latter combination of factors.

*Producers Sell in Small Lots*

A majority of the growers must sell in small lots, since nearly 70 percent produce less than ten bales per year. Very few of the producers wait until all the crop is harvested to sell, but gin and sell as the crop is harvested to get money for harvesting expenses. In a study in 1947, sales of cotton in one-bale lots represented about 17 percent of the total sales in the United States.[11] About 37 percent of the production is sold in lots of five bales or less. With these small sales, individual producers' ability to bargain is restricted.

*Excess Gin Capacity*

Average costs per bale for ginning cotton are usually substantially less for gins with annual volumes of ginnings of 500 or more bales than for gins with smaller volumes. However, the number of bales ginned per gin

[10] Soxman, *op. cit.*
[11] Soxman, *op. cit.*

stand in the United States usually averages less than 300 bales. This indicates that the cost of ginning might be reduced considerably by increasing the volume of cotton per gin.[12] This would require a reduction in number of gin stands operated. Such a reduction might well be brought about by discontinuing the use of old, badly worn, and obsolete equipment. In the 1947–1948 season, 75 percent of the cotton was hauled six miles or less to gin, therefore the number of gins could be decreased considerably without causing farmers to travel unusually long distances to gins. Bureau of Census reports relating to the number and capacity of gins and to the number of bales ginned during the 1945–1946 season indicate that if all gins had been operated at capacity on the basis of a twelve-hour day, the 1945 crop could have been ginned in about twenty days.

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[12] Howell, *op. cit.*

CHAPTER TWENTY

# Tobacco Marketing[1]

## THE PRODUCT AND ITS USE

### *United States Production*

Owing to the localized, but concentrated, nature of production, tobacco is the chief source of income in many areas. For example, in 1949, North Carolina tobacco sales amounted to about one-third of the nation's total tobacco sales and accounted for three-fourths of the total crop sales of the state. Farms within given areas are almost wholly dependent upon tobacco as a source of cash farm income. Twenty-one states produced tobacco in 1950, but the three leading states—North Carolina, Kentucky, and Virginia—produced 70 percent of the total United States tonnage.

Because of the large amount of labor required, tobacco farms are usually small. The average acreage per farm growing tobacco is about three acres. Very few farms, indeed, grow more than twenty acres. As with other commodities, this small-scale production means that the marketing system must be designed to handle small quantities of various grades of tobacco.

### *Classification of Tobaccos*

The tobacco industry in the United States is highly specialized. Tobacco is not a single crop, but rather a group of crops each having distinctive characteristics and uses. Methods of curing vary materially, and except for the cigar and miscellaneous types, they provide one basis for classification. The cigar types are classified on the basis of use.

Tobacco is first classified on the basis of its distinct characteristics caused by varieties of soils, climate and methods of cultivation, harvesting

[1] By C. B. Cox (see Chapter 19).

and curing; this division is called a class.[2] Each class is subdivided into types. Tobacco which has the same characteristics and corresponding qualities, colors, and lengths is treated as one type. Types are further subdivided into grades. The grade of tobacco is based upon three factors—group, quality, and color. The group is determined by the shape of leaf, body, percentage of injury, and other common characteristics. For example, the normal groups for flue-cured tobacco are lugs, cutters, and leaf. The second factor of a grade is quality which is based on a combination of elements of smoothness, oil, maturity, body, width, porosity, color shade, finish, and uniformity. The six degrees of quality for flue-cured tobacco are choice, fine, good, fair, low, and common. The third factor of the grade is color. The colors recognized in flue-cured tobacco are lemon, orange, red, dark red, and green.

Any combination of group, quality, and color can be made to form a grade. As this method of expressing grades is too cumbersome for practical purposes, symbols are used for each group, quality, and color. For example, flue-cured tobacco, produced principally in the Piedmont section of Virginia and North Carolina, taken from the top portion of the plant (leaf), and being of choice quality and lemon color, would be designated as type 11 B1L.

The following are the six main classes of tobaccos which are divided into twenty-nine recognized different types:[3]

Class 1. Flue-cured, types 11, 12, 13, and 14
Class 2. Fire-cured, types 21, 22, 23, and 24
Class 3. Light air-cured, types 31 and 32, and dark air-cured, types 35, 36, and 37
Class 4. Fillers, types 41, 42, 43, 44, and 45
Class 5. Binders, types 51, 52, 53, 54, 55, and 56
Class 6. Wrappers, types 61, 62, and 65
Class 7. Miscellaneous, types 71 and 72

The type numbers indicate not only the type but also the class. For example, the first digit for all flue-cured types is 1.

Class 1, the flue-cured tobacco, accounts for more than half the total production of American tobacco (Figure 1). It is light colored and aromatic, and is the largest component in domestic cigarettes. The great majority of all our tobacco exports is from this class. Trends in the production of flue-cured tobacco have been steadily upward, whereas the opposite

[2] For a more complete discussion of grades, see *Tobacco Inspection, Market News, and Demonstration Services*, USDA, Production and Marketing Administration, Mimeograph, 1950.

[3] Adapted from J. F. Marsh, J. A. Hicks, and C. E. Burkhead, *Tobaccos of the United States*, USDA, Bureau of Agricultural Economics, CS-30, 1948.

has been true of some other classes. Nearly all flue-cured tobacco is now "prime"—that is, the leaves are pulled individually as they reach maturity. The leaves are then hung in barns in which heat through metal flues is applied gradually. Temperatures of from 150° to 170° F. or higher are reached during the drying process, which requires from three to five days. Flue-cured tobacco is grown in southern Virginia, North Carolina, and the coastal plain region of South Carolina, Georgia, and northern Florida.

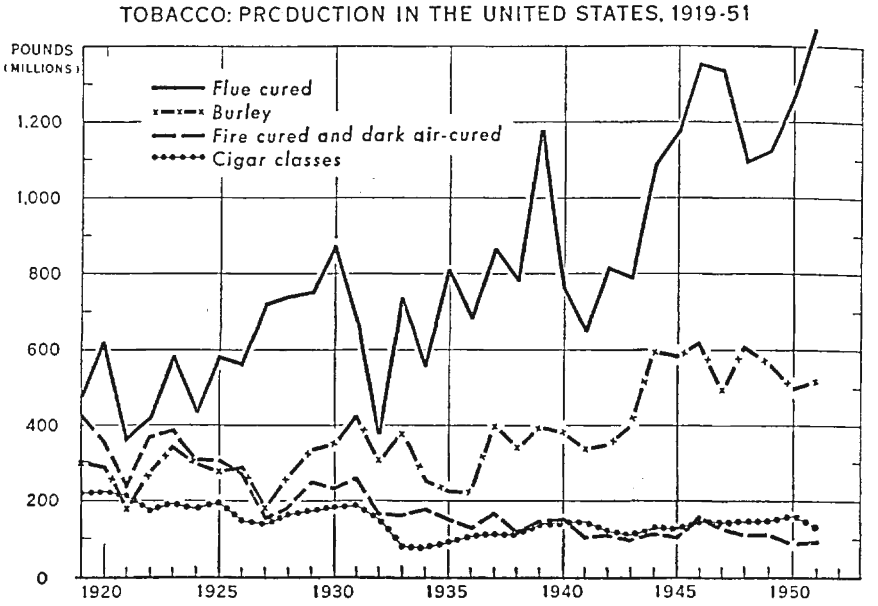


FIGURE 1. *The trends in the production of different classes of tobacco. (Courtesy USDA.)*

The second class, fire-cured, is made up of heavy-bodied, dark, strong tobacco. It is used for making snuff, roll, plug, strong cigars, and heavy smoking tobacco. The tobacco is usually hung in the barns under natural air conditions for a few days for yellowing before heat in the form of open fires is applied. The heat is less intense than that used in curing the flue-cured types, and may be applied in several installments. It sometimes takes several weeks to cure a barn of fired types. The long-time trend in production of fired tobacco has been steadily downward. Current production is now less than half the average of twenty-five years ago. Fire-cured types are produced in northwestern Tennessee, southwestern Kentucky, and central Virginia.

The third class of tobacco, air-cured, is broken into two subclasses—

light and dark. The difference in these is in the characteristics of the tobacco rather than the method of curing. The dark types are heavy-bodied, coarse in texture, and to some extent comparable to the fired types. Over the years, the dark air-cured types have averaged somewhat lower in price than the fired types. Production of this tobacco has also declined through the years. These dark types are grown in western Kentucky and to a less extent in Tennessee, Indiana, and Virginia.

The light air-cured types are not interchangeable with or substitutable for the dark air-cured because each has special characteristics. Type 31, burley, is the most widely grown single type of tobacco in the United States. It is grown in ten states and accounts for 25 percent of all the tobacco grown in this country. It is flavorful but much milder than the darker types, and is used with the flue-cured tobacco as the base for making blended cigarettes. Large quantities of burley are also used in pipe tobacco, plugs, and twists. Type 32, or Southern Maryland, a mild and more neutral tobacco with less oil, is generally thought to be about ideal with respect to burning quality. Concentrated production areas of light air-cured types are found in north central Kentucky and southern Maryland. Some is also produced in Tennessee, North Carolina, Virginia, West Virginia, Ohio, Indiana, Missouri, and Kansas.

The cigar types are all air-cured but are classified on the basis of use. The classifications do not imply exclusive uses, however. Some of the lower grades in all three of the cigar classes go into scrap-chewing and other uses. The three main classes of cigar tobacco now grown in the United States are fillers, binders, and wrappers.

Fillers are grown in Pennsylvania and Ohio. They constitute the core or body of cigars. These types are high-yielding, and the curing methods are similar to those used for burley. The stalks are cut in the fields and curing is done by the natural air unless the weather is so damp as to require artificial heat.

The binder types are grown mostly in Wisconsin and in the Connecticut valley. Small quantities are grown in Minnesota, New York, Pennsylvania, and along the Georgia-Florida line. They are used for binding the fillers into the form of cigars.

Wrappers are the most costly tobacco. Used for the outside cover of cigars, the leaves must be elastic, relatively free of damage, uniform in color, and of good burning qualities. In addition, the best wrappers are thin, smooth, and of fine texture. In order to obtain such qualities some protection is needed from the sun and weather. A permanent framework is erected over which open mesh cloth is tacked enclosing large fields. Cultivation is

carried on under this cover. The leaves of wrapped tobacco are primed as for flue-cured tobacco, and the curing and conditioning require much more handling than most other classes. The wrapper types are grown in the Connecticut valley and in Georgia and Florida.

*Domestic Consumption*

About 80 percent of all tobaccos used in this country in 1952 was consumed in the form of cigarettes. This is in sharp contrast to tobacco utiliza-

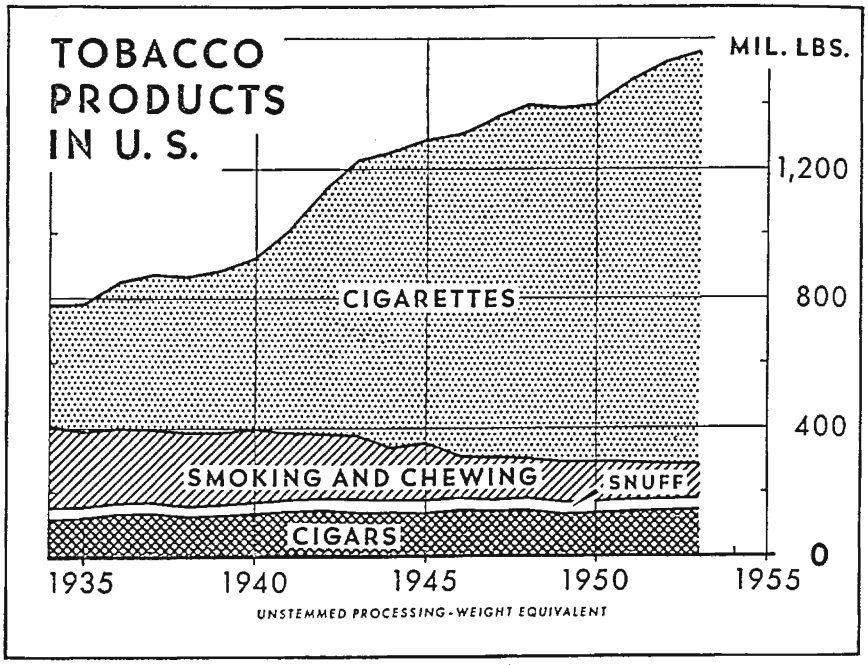


FIGURE 2. *Trends in the uses of tobacco in the United States. (Courtesy USDA.)*

tion in 1920 when twice as much was used for pipe tobacco and snuff as for cigarettes. Cigar consumption accounted for 9 percent of total utilization in 1952 compared to 26 percent in 1920. Tobacco and snuff accounted for only 10 percent of total consumption in 1952 compared to 51 percent in 1920 (Figure 2).

Owing to the time required for off-farm curing and processing, most tobacco is stored for as long as several years before it is used. Storage stocks usually exceed annual production. In 1950, stocks were 52 percent greater than production.

## FARM MARKETING METHODS[4]

### *On-Farm Sales*

Some tobacco is purchased by buyers who come to the farm itself. Such on-farm sales are of considerable importance in the sale of cigar tobaccos. Sales may be made during the growing season, but the bulk of sales are made during or after the curing season. The price may be either for the farmer's entire crop or quoted by different grades. On-farm sales of tobacco other than cigar types are declining but are still of considerable importance in some dark air-cured, fire-cured, and burley areas. Buyers may be local speculators, dealers, and manufacturers who wish to buy certain crops because of their quality.

There are several disadvantages of on-farm sale which can be summarized as follows:

1. The farmer has little knowledge of actual market conditions which may be prevailing. The typical farmer has only a limited association with buyers and sellers, and both of these groups may be reluctant to disclose prices.[5]
2. Although there are savings to the farmer in marketing and transportation costs, these savings may be offset by a lower price resulting from the greater expense incurred by buyers.
3. Price support loans are based on grades as determined by federal graders. On-farm sales make such grading more difficult and thereby reduce the possibility of participation in the loan program.
4. Unless prices are paid on the basis of quality, growers may tend to neglect quality control, particularly if sales are made prior to harvesting and curing.

### *Hogshead Selling*

Hogshead marketing began in colonial days when packed hogsheads were fitted with shafts for transportation to central markets. Sales were made on the basis of official inspection. This form of marketing reached its peak about the time of the Civil War but began to decline about 1889. Marketing by hogshead is almost nonexistent today. Baltimore is the only remaining market which receives, inspects, and sells such deliveries.

[4] For further detail see C. E. Gage, *American Tobacco Types, Uses and Markets*, USDA Circular 249, 1942.

[5] For more details see H. H. Bakken and W. F. Mueller, "Oligopsony in the Wisconsin Tobacco Industry," *Land Economics*, May, 1952.

*Loose Leaf Auctions*

The loose leaf auction is now the principal method of sale for all tobaccos except the cigar types. The sales warehouses are one-story buildings, usually well lighted with skylights, and sometimes have as much as 100,000 square feet or more of unobstructed floor space. Sales warehouses are located in the major production areas so that most of the tobacco to be

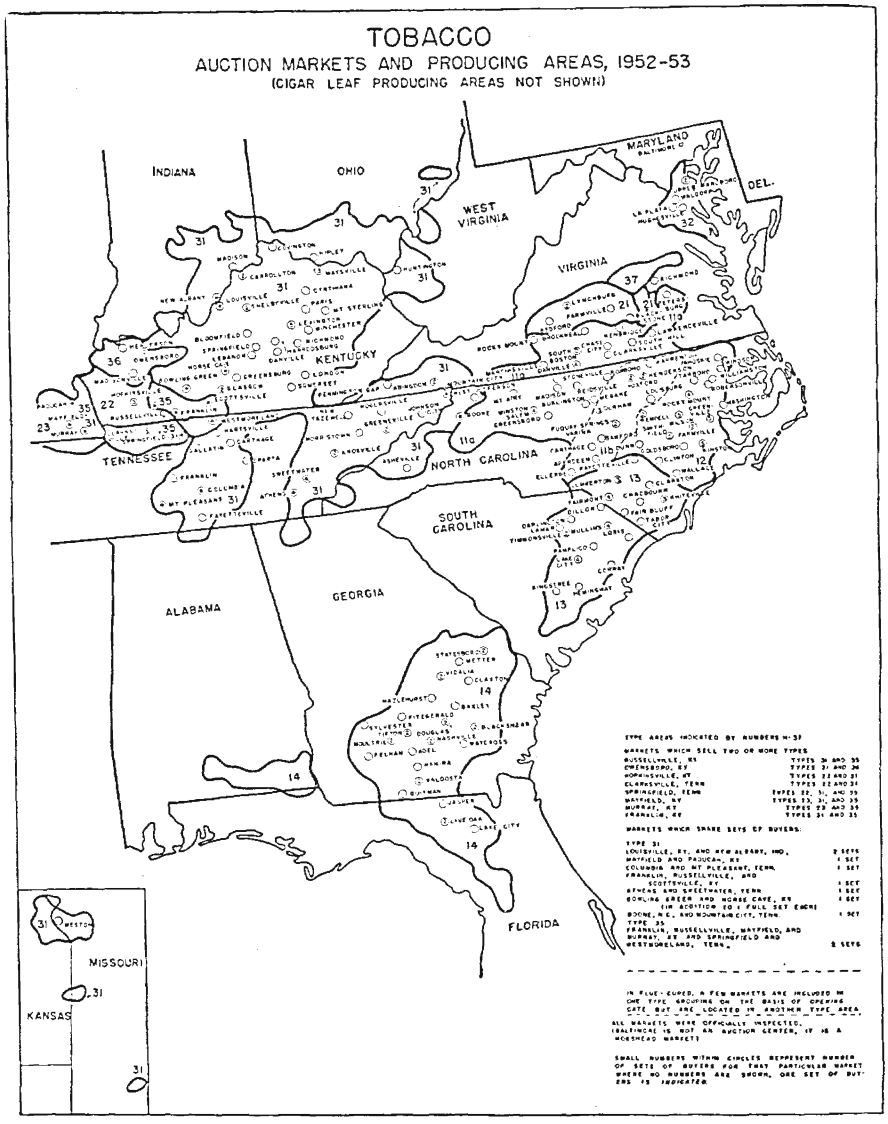


FIGURE 3. *Location of tobacco auctions and buyers. (Courtesy USDA.)*

sold is usually brought in by the farmers themselves (Figure 3). The tobacco is weighed and tagged and displayed on the floor in round piles with the stem end out. Before the sale, the tobacco is graded by a federal grader.

Sales are conducted according to a prearranged schedule which permits buyers to move among the several warehouses in a given market area. Small markets with only two or three sales warehouses may have only one group of buyers, while a larger market may have several sets of buyers which work simultaneously. This also is shown in Figure 3. Buyers include representatives of tobacco manufacturing and exporting companies and speculators (pinhookers). The sale is conducted as the auctioneer moves about the various piles of tobacco on display in the warehouse.

To the uninitiated observer, sales are a scene of utter confusion. He can scarcely tell auctioneer from buyer from warehouseman, and finds it almost impossible to determine who bought which pile of tobacco for what price! The owner may "no sale" any basket and place it elsewhere in the warehouse, remove it to another warehouse, or hold it for later sale. No warehouse charges are paid if tobacco is removed from the warehouse unsold.

The sales dates vary with production areas. The Georgia-Florida markets open first, usually in mid-July, and continue through most of August. Markets in South Carolina open a week or so later and continue through October. North Carolina markets follow and conduct sales through November. Burley and fire-cured markets operate from December to February or March. Southern Maryland markets begin sales in May and continue through the summer months. Thus some type of tobacco is being sold nearly every month in the year.

### *Cooperative Associations*

At the present time, cooperative associations do not make up a separate type of market organization, but function largely as farmers' representatives in conjunction with the auction system. Tobacco cooperatives have a long and turbulent history. By 1923, almost half of the nation's tobacco was marketed through various cooperative associations. But the movement declined, and by 1930 only about 2 percent of the production was marketed by cooperative organizations. At the present time "Cooperative Stabilization Corporations" perform the storage functions in connection with the government loan programs which are the mechanism of price supports.

## MARKETING CHANNELS

As indicated in Figure 4, tobacco may be sold directly to the manufacturer, or to dealers or speculators who in turn sell to the manufacturers.

In the case of indirect sales, redrying, stemming, and packing may occur before the tobacco finally reaches the manufacturer.

Tobacco, as delivered to the market by farmers, is in a semiperishable condition because of high moisture content. Except for certain cigar types, aging and fermentation occur after leaving the farm. Sometimes a period

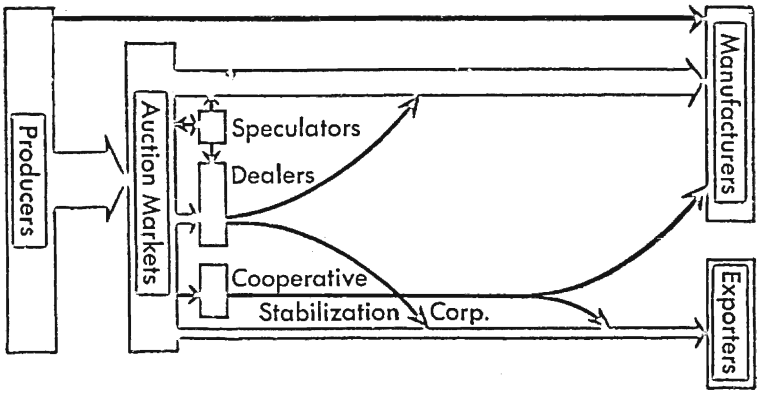


FIGURE 4. *Principal marketing channels for United States tobacco.*

of two or three years is necessary for the complete fermentation process to take place. Prior to storage, tobacco is cleaned, reclassified, and redried to obtain the moisture necessary for fermentation. The weight loss from cleaning, redrying, aging, and stemming is such that the manufacturer's net yield is about two-thirds of the farm sales weight.

## TOBACCO MANUFACTURING

As has been pointed out, tobacco leaf is the raw product for many different kinds of products. Cigarettes are by far the most important of these products in the United States. In 1947, there were 1,086 tobacco manufacturing establishments which employed a total of 111,782 persons. However, the manufacturing capacity is highly concentrated in the hands of a very few firms. More than 90 percent of all cigarettes made in 1947 were manufactured by four companies (Figure 5). Eight companies made over 80 percent of the snuff, chewing, and smoking tobacco. In cigars, the top eight companies produced 57 percent of the total. The nature of tobacco manufacturing is such that mass production and assembly line techniques can be widely used.

Recent years have seen substantial changes in manufacturing technology which have still further increased the advantages of large-scale production. In 1947, about 370 billion cigarettes were produced compared

with 122 billion in 1929. However, the number of workers in the industry only increased 21 percent during this period.

In the marketing of the finished product, large-scale operations are also favored. To a substantial extent, the market for any given brand of cigarette is nation-wide. The cigarette is a low-bulk-and-weight product

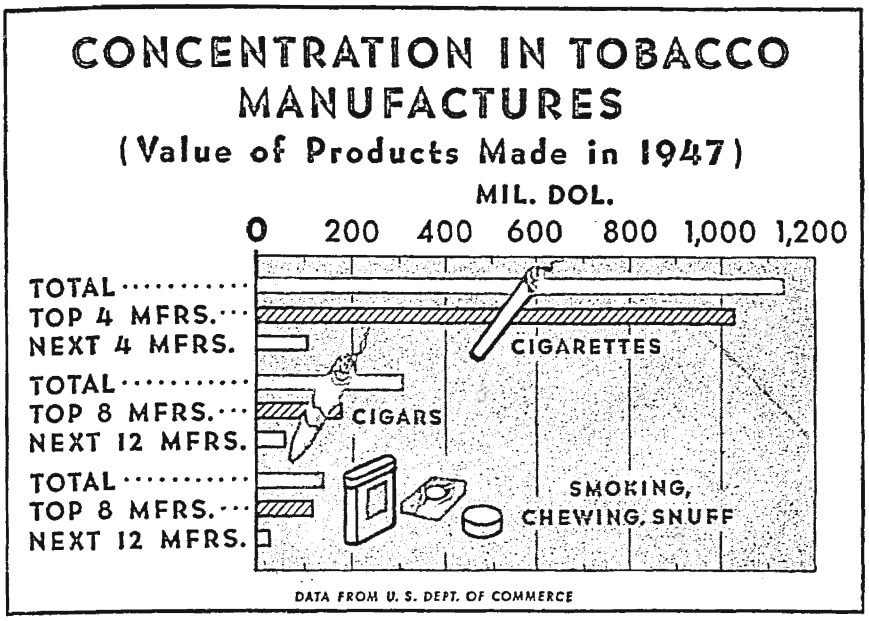


FIGURE 5. *The concentration in tobacco manufactures in the United States, 1947. (Courtesy USDA.)*

compared to its value, and transportation charges, therefore, are not a limiting factor in its distribution. The distribution system is built largely on nonprice competition. As any listener to the radio or viewer of television can testify, the various companies make a tremendous attempt to make the public brand conscious.

## MARKETING MARGINS OF CIGARETTES

The farm value of tobacco in a package of cigarettes has fluctuated from a low in 1931 of about a half cent to a high in 1950 of slightly over 3.4 cents (Figure 6). The average during the prewar period of 1935–1939 was about 1.4 cents. To a substantial degree, all of the analysis of the farmer's share of the food dollar which was developed in Chapter 5 applies to tobacco.

The retail price of cigaretes has gradually increased from 12.7 cents per pack in 1933 to about 22.5 cents in 1953. The retail price includes the farmer's share, the manufacturer's and leaf dealer's margin, the distributor's margin, and federal and state excise taxes.

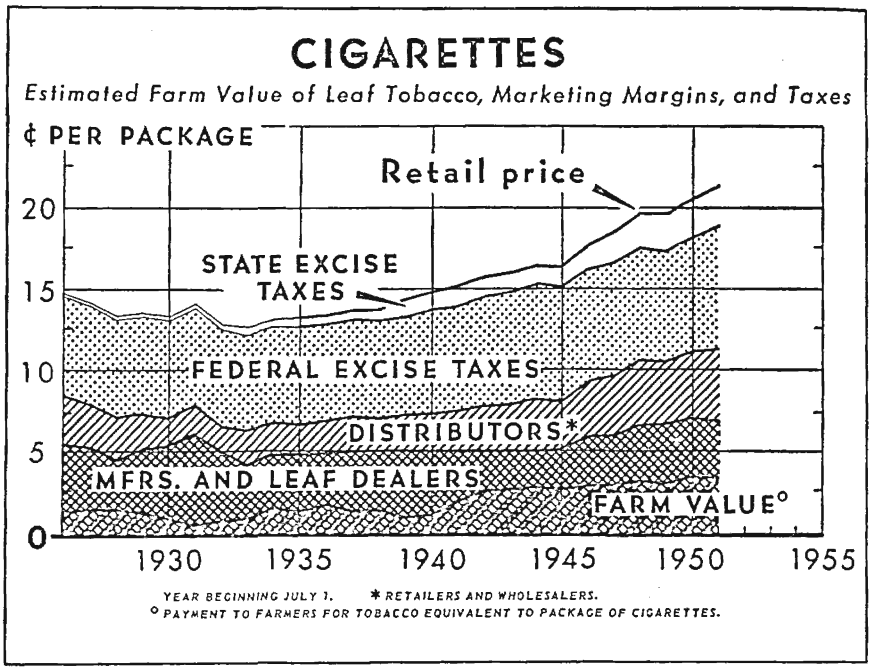


FIGURE 6. *The breakdown of cigarette prices showing the farmer's share and marketing charges. (Courtesy USDA.)*

*Manufacturer's and Leaf Dealer's Margins*

The margin of the manufacturer and leaf dealer is the difference between the farm value of the tobacco and the average wholesale price of cigarettes received by the manufacturers. It therefore includes all of the costs of converting the leaf tobacco sold by farmers into the finished cigarette. As such, it also covers the cost of any foreign imported tobacco which may be used. The profits of the tobacco manufacturing firms are also included.

*Distributor's Margin*

The distributor's margin represents the cost of wholesaling and retailing cigarettes. It is the difference between the retail prices and the manufacturer's wholesale prices excluding excise taxes.

*Federal and State Excise Taxes*

Excise taxes are a major part of the marketing margins for cigarettes. During 1935-1939, excise taxes accounted for 6.7 cents and the margins of the manufacturer, the dealer, and the distributor for 5.7 cents of the 13.9 cents average price of a package of cigarettes. In 1951, excise taxes accounted for 10 cents and manufacturer, dealer, and distributor margins for 7.9 cents of the 21.3 cent average price of cigarettes. In recent years, increases in state and federal excise taxes, along with a wide variety of city taxes, have accounted for much of the rise in retail prices of cigarettes.

The major role of taxes must not be omitted from any consideration of marketing margins for cigarettes and other tobacco products. In 1950, federal tobacco taxes amounted to almost as much as the combined federal receipts from taxes on gasoline, oil, tires and tubes, automobiles, trucks, buses, and motorcycles. State revenues from tobacco accounted for 3.5 percent of the general state revenue.

## ACREAGE AND PRICE CONTROL[6]

Tobacco has been defined as a basic crop for which price support is compulsory (Chapter 9). In general, supports have been made effective through storage in the nonrecourse loan program. During every year from 1933 to 1953, except 1939, federal price support actions have been a major factor in tobacco prices. Along with this aid has developed a very elaborate system of production control through a system of acreage allotments for each individual tobacco producer. Each individual grower can plant only his allotted acreage. He then may secure the support price through placing his tobacco in storage and securing loan price.

The net effort of this program has been to regulate effectively who grows tobacco. Since acreage allotments are granted on a historic basis, the production pattern has tended to become frozen. Since the controls are based upon acreage and not production, the program has tended to focus attention on improved production practices. As a result, there has been an upward trend in yield per acre as tobacco has been planted on better land with better seeding, fertilization, and cultural practices. The program has also focused greater attention on grading as the loan program is tied to graded tobacco. Improved market information has also become available as increased data have been compiled through the operation of the program. In addition, the farmer has been provided with the mechanism which enables him to store his product for more advantageous prices.

[6] For a detailed description of the operation of the control program, see *Tobacco*, USDA, Production Marketing Administration, p. 140, 1952.

Many objections have been raised against the program. There is no doubt that the individual producer does not have the freedom to grow tobacco where and when he chooses. The price support feature has resulted in domestic prices which are often well above the world prices for tobacco. Since tobacco is a product which in the past has had a substantial export market, this is an important consideration. Some of the foreign market has probably been lost as production in other areas of the world has been stimulated by high domestic prices. Much of the benefit from the higher prices has probably been capitalized into high land prices. With the acreage allotment system, the most valuable aspect of a farm has often become, not the fertility of its land, but rather the size of its tobacco base.

Regardless of the pros and cons concerning the control program, it is highly popular with the growers. As with other production control programs, tobacco growers must approve of its operation by a majority vote in a referendum or the program is discarded. With one exception, 1939, each time the program has been submitted to the growers, they have appoved of its operations by huge majorities—sometimes by over 90 percent. The history of the tobacco control programs leads to the conclusion that some types of controls are probably a permanent part of tobacco marketing. Those who decry the loss of the "free competitive market" are perhaps bemoaning the loss of something which never really existed. The market always has been one of multitudinous small sellers on the one hand and a few very large buyers on the other. There is considerable evidence that buyers have not always been actively competitive.[7]

## INTERNATIONAL TRADE

Of a total world production of 3.1 million tons (the USSR and China excluded) in 1940, 560 thousand tons entered international trade. The principal importing and exporting countries are given in Table 1. The United Kingdom was the leading importer, and imported one-fourth of all tobacco that entered international trade. The United States, the leading exporter, exported nearly two-fifths of the total tobacco sold internationally.

### *United States Exports*

The amount of tobacco exported by the United States declined throughout the decade of the thirties. It was not until 1951 that export volume approached the average export tonnage of 1924–1928. From 1923 to 1929, exports averaged only slightly less than 40 percent of the total production. During the postwar years of 1948–1950, exports amounted to only

[7] For a full description of price policies, see W. H. Nicholls, *Price Policies in the Cigarette Industry* (Nashville, Vanderbilt University Press, 1951).

about one-fourth of domestic production.[8] Much of this loss in export can be explained by the growth of domestic outlets—particularly in the sharp

TABLE 1. *Major Tobacco Importing and Exporting Countries, 1950*

| IMPORTERS | | EXPORTERS | |
|---|---|---|---|
| COUNTRY | AMOUNT (1,000 METRIC TONS) | COUNTRY | AMOUNT (1,000 METRIC TONS) |
| United Kingdom | 139 | United States | 216 |
| Germany | 46 | Turkey | 51 |
| United States | 41 | India | 50 |
| Netherlands | 29 | Southern Rhodesia | 41 |
| Spain | 25 | Brazil | 36 |
| Belgium-Luxembourg | 22 | Greece | 26 |
| France | 21 | Dominican Republic | 14 |
| Denmark | 14 | Indonesia | 12 |
| Philippines | 13 | Cuba | 12 |
| Egypt | 13 | Canada | 12 |

SOURCE: USDA statistics.

upward trend of consumption of cigarettes. The general breakdown in world trade during the depression of the 1930's and the war that followed also affected the tobacco trade. Just how much influence the tobacco support programs have had on the volume of exports is an open question. It seems likely, however, that some areas in other countries which are now producing tobacco might not be doing so if the price of American tobacco had not been protected.

## MAJOR MARKETING PROBLEM AREAS

The tobacco marketing system provides a means whereby even the smallest tobacco farmer can sell a semiperishable product quickly. Payment is prompt and assembly costs are low relative to some other farm products. In most production areas, the grower has a choice of several sales warehouses and in many cases he can choose between two or more markets. The nature of the market makes it possible for farmers to deal directly with representatives of manufacturers. Yet problems exist in marketing tobacco under the present system. Some of these problems may be summarized as follows:

1. Prices vary on the same market for tobaccos of identical federal grades.

[8] Production tonnage is on a farm sale weight basis and exports on a declared weight basis. Exports on a farm sale weight would be 10 to 12 percent greater than on the declared weight basis.

Indeed, the same basket of tobacco sold on a given market may bring different prices if the bid is refused and the tobacco sold again in a different location on the warehouse floor. An extreme case is that of a farmer who sold the same basket of tobacco ten times at prices ranging from 8 to 28 cents per pound.[9] Variations in prices of identical tobacco or of tobacco of the same federal grade may arise from the following causes:

(a) Inability of buyers to accurately determine grade. This may arise from crowded warehouse conditions and rapidity of sales which prevent proper inspection of the tobacco by all buyers. Lighting conditions (location of skylights and amount of sunlight) may prevent accurate quality determination. Variations in price of the same federal grades of tobacco could be due to the fact that federal grades and buyer grades are determined by different criteria. And some variation may arise from the inherently subjective nature of grade determination.

(b) Tobacco is sold by many small producers and purchased by a relatively small number of large manufacturers. This fact has been used to argue that the individual farmer has little or no bargaining power and must accept the price offered by the buyer. The federal government has investigated the tobacco manufacturing industry to determine whether or not there existed violations of the Sherman Anti-Trust Act. Several leading tobacco manufacturers were convicted in federal courts as possessing power to exclude competition.

(c) Tobacco is a semiperishable product which is difficult or impracticable to store on the farm for more than a few months. Thus, the bargaining position of the farmer is further impaired since he cannot withhold his product from the market in anticipation of higher prices. However, the price support program of the federal government has greatly increased the bargaining power of farmers.

2. It is claimed that tobacco marketing costs are excessive because many warehouses operate at considerably less than their capacity.[10] This condition also results in a shorter marketing season which may be to the disadvantage of the farmer in curing and preparing his crop for market. The short market season is said to be particularly disadvantageous in the Georgia belt. It must be remembered, however, that a certain

[9] J. J. Wooten, Jr., *The Plight of the Cigarette Industry of North Carolina* (Chapel Hill University of North Carolina Press, 1931).

[10] See P. D. Converse, "Tobacco Auctions Evaluated," *Journal of Business*, University of Chicago, July, 1943.

amount of duplication of services and "inefficient use of facilities" is a cost of maintaining effective competition between warehouses.

3. Lack of knowledge of grades by farmers poses a problem. Farmers may find it difficult to determine what grade classifications are desired by buyers. Buyers apparently wish to buy tobaccos of certain qualities for their various blends. Thus, buyer standards and federal grades are determined by different criteria which tend to confuse rather than assist the producer's knowledge of grades. Also, some farmers are not interested in or are not aware of advantages secured from proper grading.
4. Small lots in which tobacco is handled make for excessive marketing costs. Small producers with a few acres of tobacco may have only several hundred pounds of tobacco of the same grade. Instead of selling in one lot, it is sold in several smaller lots. Much labor is required to handle these small lots.

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CHAPTER TWENTY-ONE

# The Place and Problems of Agricultural Cooperatives

Agricultural history is full of examples of the continuing battle of the farmer against the abuses, either real or imaginary, of the marketing "middleman." The farmer has continually complained about having to "sell cheap" as a producer and "buy high" as a consumer. Cooperative organization is one of the answers to these problems which has been proposed by farmers.

Mutual action by farmers to help solve large tasks have long been a part of agricultural life. Barn raisings, husking bees, and threshing rings all required that many act together with a common purpose. Cooperative enterprises of today are similar in nature but have been established as formal business organizations.

Most cooperatives in the United States are among farmers. They are often called the "off-farm arm" of farmers. They have been organized to provide a wide variety of services, to help sell the farmer's products, and to help farmers purchase their needed goods. Many cooperative leaders look upon cooperation as a way by which the multitudinous, independent, small farm units can effectively compete in a business world which is composed of larger, more powerful units. It is the organization and operation of these cooperatives as they have developed in our competitive business structure that we shall examine in this chapter.

## WHAT IS A COOPERATIVE?

### *Distinctive Characteristics of American Cooperatives*

Almost all cooperative leaders of both past and present have had their pet conception of what constituted a good definition of a cooperative.

H. E. Babcock, an eastern cooperative leader, phrased it well when he said that cooperatives are a legal, practical means by which a group of self-selected, selfish capitalists seek to improve their individual economic position in a competitive society. Several aspects of this definition deserve attention. First, a cooperative is a device which permits group action for the economic gain of the individual members. Secondly, it is an active part of our competitive business framework. And thirdly, the cooperative is an institution whose characteristics are formalized in the laws of the land as one of the legal forms of business organization.

The so-called Rochdale principles are generally conceded to be the cornerstone of the modern cooperative structure. This list of practices received its name from the group of weavers of Rochdale, England, who are credited with founding one of the first successful cooperative businesses with the opening of a store in 1844. These principles of cooperative operation as developed by the Rochdale pioneers are usually listed as follows: (1) open membership, (2) democratic control, (3) dividends on the basis of purchase, (4) limited returns on capital, (5) political and religious neutrality, (6) cash trading, and (7) promotion of member education.

Much of the intent of these operating principles has been incorporated into the body of law which sanctions American cooperation. The legal definition of what constitutes a cooperative has gradually evolved through the passage of laws by the different states. The passage of the Capper-Volstead Act by Congress in 1922 helped codify this legal concept of agricultural cooperation, though even today the details of laws vary among the several states.[1]

It is from the Rochdale and post-Rochdale experience that the basic concepts of modern cooperative business organization have been developed. There are three fundamental concepts which help differentiate a cooperative from other forms of business enterprises. These concepts must be incorporated in the organizational and operating pattern of an enterprise in order for it to qualify as a cooperative.

The first of these distinctive concepts is that *the ownership and control of the enterprise must be by those who utilize its services.*[2] The control is exercised by the owners as the patrons of the business rather than by the owners as investors in the business. In no other form of business enterprise is there a comparable patron-owner relationship. Such a relationship means

[1] For a brief review of the continuous changes in the legal provisions, see R. L. Kohls and R. Blais, "Trends in Legislation of Incorporation of Agricultural Cooperatives," Indiana Circular, 1951.

[2] For further development of this very useful framework, see Harold Hedges, "Matching Cooperative Principles with Present-Day Practices," *American Cooperation* (American Institute of Cooperation, Washington, D. C., 1951), pp. 69–73.

that the primary objective of the cooperative enterprise is to do the job assigned to it at a minimum of cost and with maximum satisfaction for its owner-patrons. In contrast, the primary objective of nonpatron firms is to maximize returns over costs for the benefit of the owner-investors. In order to assure the effectiveness of this concept, often some provision is made in the by-laws of cooperatives to limit the amount of business which can be done with nonmembers.

Another distinctive cooperative concept is that the *business operations shall be conducted so as to approach a cost basis* and any returns above cost shall be returned to patrons on an equitable basis. From this concept arises the common practice of referring to cooperatives as nonprofit business concerns. The patronage refund of cooperatives is the device used to return to the owner-patrons the overcharges or underpayments which have resulted in earnings above cost. In noncooperative businesses, earnings or profits belong to the business for distribution or use as the business sees fit. In cooperatives, such earnings are a liability which is owed to the patron-owners.

The third distinctive cooperative concept is that the *return on the owner's invested capital shall be limited.* The capital requirements of a cooperative may be no different from that of any other type of business organization engaged in similar activities. However, the relationship of the investor to the business is quite different. In a cooperative the patron-owner invests his money primarily so that the organization may provide desired services for him. His decision to enter or remain as a part-owner of the cooperative is made largely on the basis of his opportunity to benefit as a patron-user. In noncooperative forms of business, investors offer their money in expectation of a profitable return on their invested capital. The need for capital may be as urgent for a cooperative, but the methods of capital accumulation must acknowledge the fact that returns on the capital are limited.

These distinctive differences give rise to several operational differences between cooperative corporations and noncooperative corporations. These may be summarized as in Table 1.

### *Kinds of Cooperative Business*

Cooperative associations, like other business organizations, are established to perform certain tasks. When classified according to the tasks performed, cooperatives fall into four broad categories—marketing, purchasing, service, and processing associations.

MARKETING COOPERATIVES Marketing cooperatives are those through which farmers sell the products of their farms. These cooperatives

TABLE 1. *Similarities and Differences of Three Types of Business Organizations*

| CONDITION | INDIVIDUAL OR PARTNERSHIP | NONCOOPERATIVE CORPORATION | COOPERATIVE CORPORATION |
|---|---|---|---|
| Operated for profit motive? | Yes | Yes | Yes |
| How are earnings distributed? | To owners or partners | To owners on basis of shareholdings | Largely to patrons on patronage basis |
| Who controls the firm, selects manager, etc. | Individuals or partners | Board of Directors elected by stockholders | Board of Directors elected by patron-owners |
| How is voting done? | None or by agreement | Usually 1 vote for each share of stock | Usually 1 member, 1 vote |
| What is owners' liability? | All property of owners | Assets of corporation | Assets of cooperative |
| With whom is the business conducted? | Public | Public | Chiefly members but often others also |

may collect members' products for sale, grade, package, and perform other functions. Cooperative livestock commission organizations, producers' milk associations, and cooperative elevators are examples of the cooperatives acting as marketing cooperatives. The objective of such organizations is to secure the greatest possible amount for the products of their farmer-owners. Some associations act solely as commission agents. Some associations act as bargaining agents and do not actually handle the products. Others will actually buy the commodity from the farmer for resale.

Marketing cooperatives of various types handle approximately 20 percent of all farm commodities sold. The proportion of commodities which is marketed cooperatively varies from commodity to commodity, as can be seen by studying Table 2. Some of the marketing cooperatives are large and

TABLE 2. *Percentage of Selected Products Which Were Marketed Cooperatively, 1945–48*

| PRODUCT | PERCENT OF TOTAL | PRODUCT | PERCENT OF TOTAL |
|---|---|---|---|
| Citrus fruits | 60 | Wheat | 35 |
| Milk | 25 | Poultry and eggs | 10 |
| Cotton | 10 | Cranberries | 75 |
| Livestock | 20 | Citrus juices | 30 |
| Wool | 35 | Butter | 35 |
| Rice | 25 | | |

SOURCE: Indiana Farm Bureau Co-op Bulletin, *Co-ops, What They Are and How They Work*, p. 6.

powerful organizations. The role of some of these associations in carrying out marketing orders and agreements has been discussed previously. Many of the common branded products such as Sunkist oranges, Sun-Maid raisins, Sun-Sweet prunes, Eatmor cranberries, and Diamond Brand walnuts are products of cooperative associations.

PURCHASING COOPERATIVES Purchasing cooperatives are those through which members buy the supplies they need. The farmer here reaches back toward the raw material source for his supply. Purchasing cooperatives often engage only in retailing and wholesaling. In other instances, they manufacture the products they sell and acquire the sources of raw materials. Most states have large state-wide associations which are examples of this type of cooperative. The objective of such organizations is to effect savings for the farmer on the things he buys. The principal source of such savings usually will come from lower prices or from higher quality and better adapted supplies and equipment.

The sale of various farm supplies accounts for most of the business volume of these cooperatives, although increasing amounts of items for farm household use are being handled. Table 3 shows how the nearly 2 billion dollars of sales to farmers of these cooperatives in 1951–1952 were apportioned.

TABLE 3. *Importance of Various Items Sold Through Local and Large-Scale Purchasing Cooperatives, 1951–52*

| ITEM | PERCENT OF SALES |
|---|---|
| Feed | 42 |
| Petroleum products | 22 |
| Fertilizer | 10 |
| Field seeds | 5 |
| Farm machinery | 4 |
| Building materials | 2 |
| Meats, groceries, etc. | 2 |
| Other | 13 |

SOURCE: Farmer Cooperative Service General Report 2, *Statistics of Farmer's Marketing Purchasing and Service Cooperatives*, 1951–52, p. 20.

SERVICE COOPERATIVES Service cooperatives are organized to provide their members with improved services or with services they could not otherwise obtain. The service undertaken may include credit, insurance, electric power, telephone, irrigation and drainage, hospitals, and mortuaries. Membership may be of rural or urban people or a combination of the two. The Production Credit Associations and the Rural Electric Associations

are examples of this type of cooperative. The principal source of savings from such association occurs largely because the peculiar needs of the farmer members can be better served.

PROCESSING COOPERATIVES The processing cooperative is organized to engage in the packing or processing of the farmer's products. Cheese and butter manufacturing, fruit packing, and vegetable canning associations are examples of this type of cooperative. In a great many instances the processing activities are part of the over-all activities of marketing cooperatives. It is common, for example, for cooperative cheese manufacturing associations to undertake also the marketing service of wholesaling the finished product. This is another way in which farmers, through the integration of processing and marketing made possible by their cooperative associations, attempt to extend control over their products as they move into consumption. The number and membership of these kinds of associations are shown in Table 4.

TABLE 4. *Number and Membership of Various Kinds of Farmer's Cooperatives*

| TYPE | YEAR OR DATE OF DATA | ASSOCIATIONS | ESTIMATED MEMBERSHIP |
|---|---|---|---|
| Marketing (including processing) | 1951–52 | 6,582 | 4,228,556 |
| Purchasing | 1951–52 | 3,328 | 3,032,541 |
| Service: | | | |
| National farm loan associations | Jan., 1953 | 1,164 | 312,000 |
| Production credit associations | Jan., 1953 | 499 | 477,000 |
| Banks for cooperatives | Jan., 1953 | 13 | 3,168,000 |
| Rural credit unions | June, 1953 | 108 | 24,103 |
| Farmers' mutual fire insurance companies | 1952 | 1,800 | 3,500,000 |
| Mutual telephone companies | 1937 | 32,879 | 669,344 |
| Rural electric cooperatives | June, 1953 | 908 | 3,753,372 |
| Mutual irrigation companies | 1950 | 9,374 | 148,496 |
| Dairy-herd improvement associations | Jan., 1953 | 2,151 | 40,993 |
| Dairy-cattle artificial breeding associations | Jan., 1953 | 1,623 | 571,921 |
| Others | 1950 | 562 | 126,113 |

SOURCE: Farmer Cooperative Service, USDA, General Report 2.

### *Type of Cooperative Organization* [3]

Cooperatives can also be classified on the basis of membership affiliation and control. From this viewpoint, cooperatives are usually grouped as

[3] For a description of different cooperatives which are examples of these various types of associations see the following publications of the USDA Farm Credit Administration: J. H. Heckman and G. H. Goldsborough, *Cooperative Marketing of Apples in*

independent local associations, federated associations, centralized associations, or a combination of the other types of organization.

INDEPENDENT LOCAL ASSOCIATIONS The simplest type of cooperative is the independent local association in which people hold direct membership and are able to participate in the affairs of the cooperative. The relatively small area of coverage and number of people involved mean that the opinion and action of each member can have influence. Because of the size limitation, however, such cooperatives are often limited in what they can do. These local cooperatives often join to form larger organizations to conduct mass marketing, purchasing, or manufacturing operations.

FEDERATED ASSOCIATIONS The federated association is one which is composed of several local associations which operate together as an integrated unit. Farmers are members of the local association, and the local is a member of the over-all association. Usually the motive for banding together is to secure greater business power and efficiency. In such an association, the basic channel of control is from the local up to the over-all organization. The local associations have a considerable degree of autonomy, and any powers which are not expressly granted to the central organization are retained by the locals. Savings made from the operations of the over-all association are allocated back to the member local associations. The local then adds these to whatever savings have accrued from its own operations, and this total amount is then distributed to the patron members.

CENTRALIZED COOPERATIVE ASSOCIATIONS Centralized cooperatives are those in which the patron is a direct member of the central organization and exercises control through delegates sent from the different areas to the regional's annual meeting. The central organization in turn controls the local branch cooperatives which serve the members. This plan has the advantages of centralized control which makes possible prompt and uniform action by all the local outlets. But is lacks the direct membership participation possible in federated cooperatives. The central association itself is dominant and delegates certain powers to the locals. In such an association the local units have a very limited amount of autonomy. Savings are distributed directly from the central association to the members.

MIXED ASSOCIATIONS Most large cooperative organizations today are neither totally centralized nor totally federated but rather a mixture of

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*the United States*, Bulletin 55, 1948; H. C. Hensley, *Marketing Policies of the California Prune and Apricot Growers Association*, Circular C-132, 1948; K. B. Gardner and A. W. McKay, *The California Fruit Growers Exchange System*, Circular C-135, 1950.

the two. Often associations which were fundamentally federated in nature undertake new operations which are organized on a centralized basis. Through stronger bargaining power or other methods, the over-all association may essentially gain control of the member local cooperatives. On the other hand, cooperatives which were originally organized on a centralized basis find it practicable to establish at the local level a committee of farmers to suggest operating procedures for the local units. Theoretically, these committees do not have any absolute authority, but often in practice they control the policies of the local units.

Most states have state-wide organizations combining both the marketing and purchasing operations. These state associations often, in turn, combine into regional and national associations. This may be done in order either to operate manufacturing enterprises or to enhance bargaining power with noncooperative manufacturing concerns. In some instances, the regional or national associations may acquire raw materials for their manufacturing enterprises. Savings made from the operations of these regional and national associations are apportioned among their member state associations. The way in which the state associations handle these savings is dependent upon their individual type of organization.

## HISTORY AND PRESENT STATUS OF AMERICAN COOPERATION[4]

### *Early Development*

Many, looking at cooperation in a broader social sense, like to say that cooperation has existed since the first two men discovered that by working together work could be accomplished more efficiently. This type of approach contributes little to the understanding of the development of cooperation as a method of doing business.

Cooperative enterprises have been undertaken in a disorganized fashion in this country since the early colonial days. Throughout the nineteenth century, organized cooperative businesses in most commodity lines were attempted. Cooperation among farm groups as a method of presenting their opinions to the public and the government developed largely in the period of agricultural distress following the Civil War.

### *The Active Period—1910–1925*

Starting after the turn of the century more serious attention was given to the organization of all kinds of cooperative business. The movement

[4] For a more complete history of cooperative development, see H. H. Bakken and M. A. Schaars, *Economics of Cooperative Marketing* (New York, McGraw-Hill, 1937).

gained momentum during World War I and reached its peak in the postwar depression of the early 1920's. The number of marketing and purchasing cooperatives doubled in the ten-year period 1915–1924 (see Figure 1).

Several factors favored the expansion of cooperation in this period. First, rapidly falling prices in the immediate post-World-War-I period led many cooperatives to be organized to stabilize or raise prices. Aaron Sapiro, an early proponent of using cooperation to fix prices is credited

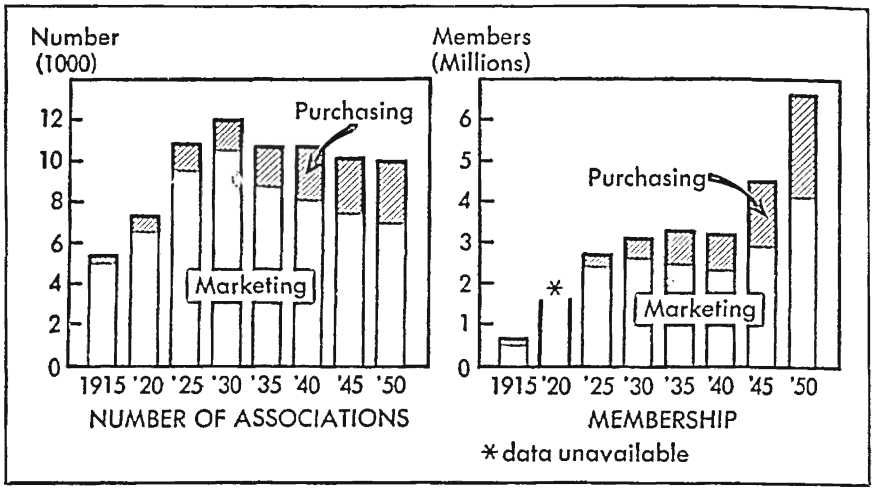


FIGURE 1. *The number and membership of marketing and purchasing associations by 5-year periods, 1915–1950. (Source: USDA, Farm Credit Administration.)*

with explaining his position in an Indianapolis, Indiana, speech in 1924 as follows: "We don't say that the purpose of cooperative marketing is to introduce any economy in the physical handling of grain because we believe that particular point is too trifling to bother with. When we talk cooperative marketing, we say that we are interested in raising the basic level of the price of wheat."

Also, there were loud complaints that private suppliers of necessary farm supplies, such as fertilizer and feeds, were taking exorbitant margins. Farmers further complained bitterly that the middlemen of the market were not interested in improving either quality or service. There was just enough truth in many of these complaints that Congress, through the passage of the Capper-Volstead Act in 1922, gave official sanction to cooperatives as a way of "self-help" and as a way of restoring and main-

taining reasonable competition in the marketing and purchasing of agricultural products and supplies.[5]

*The Consolidation Period—1925–1940*

In the flush of early enthusiasm it was inevitable that many cooperatives would be started which were unsound in their business structure. Also, it was soon evident that cooperation could not be depended upon to stabilize general price fluctuations and automatically cure the many ills of the general economic situation. These things, plus the depression of the 1930's, contributed to the short life of many cooperatives.

In order to gain economic strength, many small independent cooperatives consolidated into the large federated associations. The numbers and membership of all cooperatives tended downward throughout most of this period. However, this decrease was largely due to the decline in numbers of marketing cooperatives. Purchasing cooperatives continued to grow both in numbers and membership (Figure 1).

*The Period of Economic Growth—1940–?*

The number of cooperative associations has nearly stabilized in recent years. Marketing associations have declined slightly while purchasing associations have increased slightly. However, membership in both kinds of associations has greatly increased. The volume of business, even after changes in the price level have been considered, has grown rapidly.

The growth in the volume handled by marketing cooperatives has been due, in part, to the increase in agricultural production. The continued growth in the purchasing associations probably can be partially attributed to the changing nature of the farm business. More and more of the farmer's production items must be purchased off the farm. In recent years many of the larger associations have taken their place in the ranks of the nation's largest businesses. For example, the nation's largest cooperative, the Grange League Federation Exchange, which operates both supply and marketing installations, did approximately 162 million dollars' worth of business in 1952.[6]

In 1950, of the about 10,000 marketing and purchasing associations, 69 percent were classified as marketing associations and 31 percent as pur-

[5] Many readable stories of the early problems and efforts of cooperatives to solve them are available in the histories of many cooperative associations. Illustrative of these are: K. D. Ruble, *Men to Remember* (Chicago, Donnelley and Sons, 1947); O. M. Kyle, *The Farm Bureau Through Three Decades* (Baltimore, Waverly Press, 1948).

[6] M. A. Abrahamsen and J. L. Scearce, *Handbook on Major Regional Farm Supply Purchasing Cooperatives*, Farm Credit Administration, USDA Misc. Report 172.

chasing associations. About four-fifths of the total dollar volume of business was done by the marketing associations and about one-fifth by the purchasing associations.

Cooperation has expanded into many new fields during the last twenty years. The depression years of the 1930's gave impetus to governmental sponsorship of both credit and electrification cooperatives. The Production Credit Associations, the National Farm Loan Associations, and the Rural Electric Associations were originally established during this period. In recent years, the government has also extended aid to the formation of rural telephone associations. Then, too, there has been an expansion in insurance cooperatives, irrigation cooperatives, and other miscellaneous associations to perform special services for rural areas.

*Cooperation by Regions and Commodities*

The prerequisite for successful cooperative business ventures is large production volume. Chiefly for this reason, the principal area of commercial agriculture, the North Central states, is the region which accounts for over half of the cooperative business of the country (see Figure 2). Exten-

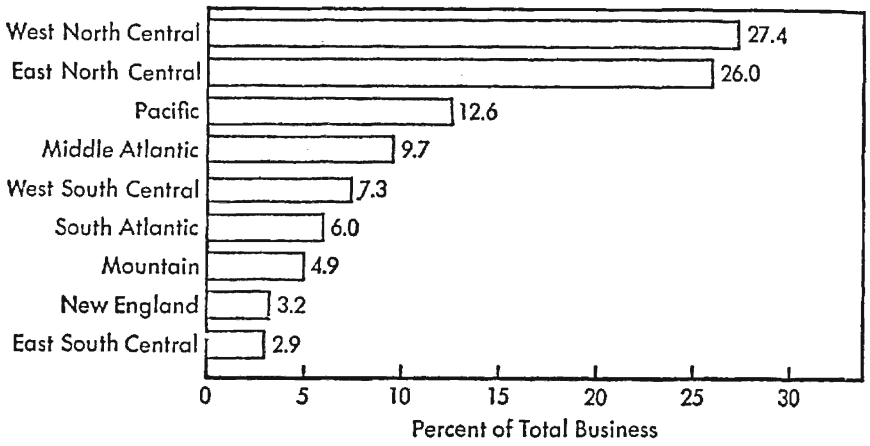


FIGURE 2. *Regional distribution of total business done by marketing and purchasing associations, 1949–1950. (Source: USDA, Farm Credit Administration.)*

sive cooperation is very difficult in low-producing, noncommercial agricultural areas.

Similarly, successful commodity cooperation also rests to a considerable extent on the nature of production. Continuous, large volume produc-

tion by specialized farm units favors large-scale cooperation much more than scattered production by nonspecialized farm units. For example, it has been found that the favorable attitude of members of dairy cooperatives increased as the size of the dairy herd increased.[7] The relative importance of cooperative business done in various farm products is shown in Figure 3.

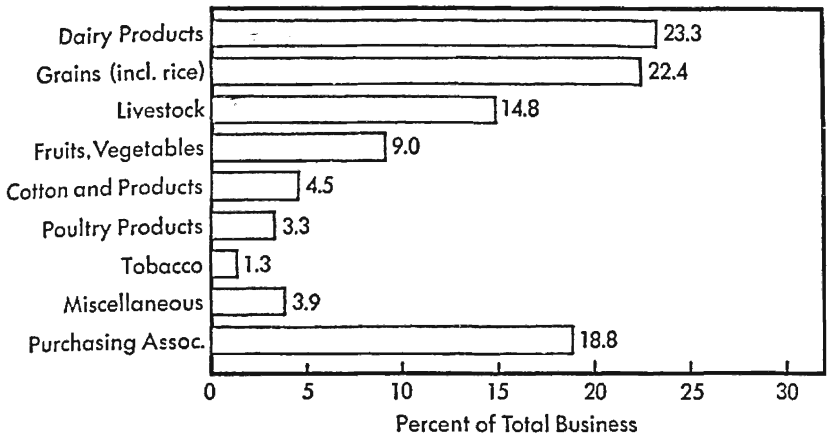


FIGURE 3. *Distribution of total business done by marketing and purchasing associations by commodities, 1949–1950. (Source: USDA, Farm Credit Administration.)*

## WHAT MAKES FOR A SUCCESSFUL COOPERATIVE ASSOCIATION?

### *Criteria for Long-Run Success*

In a broad sense, a cooperative, if it is to be more than a passing fancy, must accomplish one, two, or all of the following three things:

1. Increase the returns from sales of products of its members, and/or
2. Reduce the price or improve the quality of the purchases of its members, and/or
3. Render new or improved service or give more equitable treatment to its members.

All of the above add up to the improvement of the economic well-being of the individual members. Many studies have shown that whatever other benefits there may be from cooperation, the economic one is of the

[7] M. E. John, *Factors Influencing Farmers' Attitude Toward a Cooperative Marketing Organization*, Pennsylvania Bulletin 457, 1943.

foremost importance. One study asked the farmers what they considered to be the main advantage of cooperatives. Sixty-three percent of the members answered lower costs, high returns, and refunds.[8]

It is not enough to do a job as well as it was done by other agencies. The cooperative must do it better. A good cooperative should be the pacesetter for the industry with which it is associated. Only under these circumstances is the creation of an additional market agency justified.

There are things which even a successful cooperative cannot do for its members. A clear understanding of these limitations is necessary for successful operation. The cooperative should recognize that it cannot "set" prices unless it has monopolistic control of the supply.[9] This means that it cannot "guarantee cost of production" to its members. Cooperative associations cannot eliminate the marketing functions performed by other middlemen. Neither can they successfully, for any period of time, coerce their members against their will into trading with the association. Cooperatives are circumscribed by the same set of economic restrictions as any other form of business organization. As has been emphasized before, their success depends not upon their uniqueness, but rather upon their business ability to operate profitably and satisfy their patron-owners.

*Establishment of a Successful Cooperative*

The fundamental premise guiding the establishment of a successful cooperative association is that there be an economic need for such a new venture. There must be the opportunity to do a buying or selling job better than it is being done. This can take the form of more advantageous prices or better-quality products and service. To establish whether there is such a need which can be met by a cooperative must be determined by an assembly and objective study of the existing facts. Far too many cooperatives have been wished into existence only to fail when it was discovered there was no real additional service which they could perform.

After the need has been established, it must be ascertained whether the factors necessary for a successful business operation are available. These factors are fundamentally the same as for any other business undertaking. They can be listed as embracing the following questions:

[8] Social Research Service of Michigan State College, *Co-ops as the Farmer Sees Them*, Report given at 1947 annual meeting of Michigan Association of Farmers' Cooperatives.

[9] An extreme example of the attempt and failure of a cooperative to control price monopolistically by controlling production was the Burley Tobacco Society in the early 1900's. Physical force in the form of "Night Riders" was used to coerce growers into reducing production. Within a short time, however, the attraction of higher prices soon caused the control scheme to fail. See E. F. Dummeier and R. B. Heflebower, *Economics with Application to Agriculture*, 2nd ed. (New York, McGraw-Hill, 1940), pp. 264–266.

1. Can an adequate volume be secured and maintained? The economies of large-scale operation are just as important to cooperatives as to private corporations.
2. Can adequate and reasonable financing be secured? To build an efficient plant takes capital—to build less than an efficient plant invites failure.
3. Is efficient management available and will the association pay its price? In management, as in other things, high quality demands a high price. Successful cooperatives need as high a level of managerial ability as other businesses.
4. Is the membership prepared to meet competitive trouble? Especially in the initial stages, competitive conditions usually get worse rather than better. A new cooperative can usually expect that the rest of the business community will unite against it during the early period of its existence.

The reasons why cooperatives fail point up the importance of these factors. One study of failure problems listed difficulties in the field of management and membership relations as accounting for nearly two-fifths of the failures. Insufficient business volume and financing troubles accounted for another one-fifth of the failures! [10] In all likelihood, those cooperatives which failed because of "membership difficulties" really were having membership troubles because the association was not operating profitably or because the membership was not prepared to face the facts of business life.

## PROBLEMS OF MODERN COOPERATION

### *Size and Growth*

Paradoxically enough, the maturing of American cooperation in the sense of its attaining considerable size and economic power has presented some thorny problems. Many of the early cooperative principles seem to be easier to apply to small units than to the large cooperative aggregates of today.

Close control by the membership was one of the more important premises of early cooperation. As cooperatives have grown into large centralized and federated associations engaging in multiple kinds of operations, effective control by the members has become increasingly difficult. Students of the modern corporation are concerned with the growing ability of corporate management to perpetuate itself. In large cooperatives, the same problem exists. The one-man, one-vote provision, which was originally considered as the method of securing democratic control, is no longer a guarantee of member-owner control. Size has resulted in the breakdown of

[10] R. W. Miller and A. L. Jensen, "Failures of Farmers' Cooperatives," *Harvard Business Review*, Vol. XXV, No. 2, 1947, p. 213. This article also presents an interesting approach to the factors of cooperative success.

the memberships into districts or units which elect delegates who elect board members. In many instances, the one-man, one-vote idea has been set aside in favor of cumulative voting on the basis of business volume. Once a director is selected, the tendency is for him to serve until he resigns or dies. One study found a direct relationship between the age of the director and the length of years of service in his post. Only 13 percent of the directors of 174 cooperatives were under forty years of age. Nearly 90 percent of the directors and managers who were contacted admitted that they could influence the election of new directors.[11]

Growth in size and economic power also has made further expansion of existing cooperatives easier. New ventures do not have to be scrutinized as carefully to ascertain whether the cooperative effort is needed. Accumulation of large financial reserves makes it possible for associations to carry on unneeded ventures for long periods of time. This situation may not be compatible with the goal of increased efficiency of the marketing machinery. The question of how far the cooperative should expand its operations needs close study. Eventually, the question of the relationship of farm and consumer cooperatives must be faced. On the surface at least the aims of these two kinds of cooperatives are quite different. The consumer cooperative strives to obtain goods at lowest cost; the farmers' marketing cooperative aims to sell its products for as much as possible.

*Financing*

As stated previously, cooperatives require the same amount of capital as noncooperatives in performing similar functions. But with limitations placed on voting rights, share transferability, and the returns paid on invested capital, cooperatives cannot utilize the noncooperative method of selling additional shares to the investing public in order to secure additional funds.

When cooperative enterprises were relatively simple, only limited amounts of capital were needed. However, the desire of cooperatives to expand has focused attention on the techniques of securing growth capital. In general, cooperatives have relied on members to provide much of the financing needed, although other sources also have been used occasionally.

Membership fees are the source of capital in some cooperatives. Nonstock cooperatives of this kind are called membership cooperatives and do not have stock outstanding. In addition to membership fees, some coopera-

[11] O. R. Ray, *Selection and Responsibilities of Indiana Cooperative Directors*, unpublished M.S. thesis, Purdue University, 1953.

tives also use other methods such as selling certificates of indebtedness as a means of financing operations. Such certificates are a method of borrowing money from members and others.[12]

In the early years, earnings were returned to patrons in the form of cash refunds. Many cooperatives have abandoned this in the process of growth. Savings are now often returned in the form of stock refunds instead of cash. This procedure permits the retention of earnings above cost within the association itself to use as it sees fit.

The stock refund plan has the advantage of spreading the financial burden. Under this plan each patron of the cooperative becomes a part owner upon receipt of his stock. Since the refund is based on the amount of business done with a cooperative, ownership is divided in direct proportion to the use each patron makes of the store or business. The methods under which a member may withdraw his investment from a cooperative will vary from one association to another. Generally, in case a member ceases to be a farmer or moves out of the trade area, his investment is returned. If a member dies, his investment is usually returned to the estate. Usually the member also may sell his stock to any buyer subject to approval of the cooperative directors or hold his stock until it is redeemed by the cooperative. Some cooperatives have a fixed time for redeeming stock; others do not. If the cooperative has a policy of redeeming its stock after a fixed time, this is generally referred to as a revolving fund.

Though a continuous stock refund program is a relatively easy and cheap method of capital accumulation from the standpoint of the management, there is reason to believe that membership relations start to deteriorate under it. Such a policy also may encourage the management to follow a vigorous competitive price policy so that greater savings can be accumulated for further growth.

The sale of additional common or preferred stock provides capital for some cooperatives. The market for this stock will be limited mainly to cooperative members. Common stock has voting rights, usually one vote per member, but no guaranteed dividend. Nonmembers may hold common stock but they may not vote. Most cooperatives also sell preferred stock and sometimes bonds. These carry a fixed dividend or interest rate and will attract investors other than cooperative members. Preferred stock can be cumulative or noncumulative but usually carries no voting rights.

In practice, cooperatives secure capital by a combination of these methods. Part of the problem is that of adequate financing. Of great im-

[12] For a more complete discussion of this and other techniques see Bakken and Schaars, *op. cit.*, pp. 393–429.

portance, however, is a financing plan which will not destroy the essentially cooperative nature of the enterprise.

*Management*

Three groups of people are involved in the management of a cooperative—the members, the board of directors, and the hired manager. The members exercise their control through their elected directors. The directors have the responsibility of formulating general operating policies and of obtaining a manager to carry out these policies and report the results to the members. The manager is charged with the operating responsibility of the cooperative enterprise. He puts into actual practice the policies laid down by the board.

Problems in cooperative management are essentially the same as in other enterprises. Boards of directors cannot manage the details of a going business effectively. The manager must be competent and have the confidence of his board. On the other hand, boards cannot surrender their duties and become puppets of the manager and yet fulfill their responsibilities to the membership.

*Membership Relations*

The nature of cooperative business makes it imperative that good relationships be maintained between the members and their association. In many ways this is more important to cooperatives than stockholder relations are to noncooperative corporations. A stockholder's relationship to the corporation is that of an investor, and when he is dissatisfied with the returns he may dispose of his stock through sales to anyone else who will buy it. Members of a cooperative, however, are at the same time both owner-investors and owner-users of the business itself. They cannot as readily divorce themselves from the responsibility of the business by selling their stockholdings.

Many of the problems of membership relations are fundamentally by-products of the increased size and complexity of the associations. In large associations, the feeling upon the part of members of "*the* co-op" instead of "*my* co-op" becomes prevalent. In a great many instances only a very small minority of the member-owners take an active interest in the problems and management of their association.

A good member is an informed member. Farmers who support cooperatives are those who know what cooperatives have done and what they can and cannot do.[13] The really successful cooperatives rank this task of

[13] J. K. Stern and A. F. Dorn, *Farmer's Support of Cooperatives*, Pennsylvania Bulletin, 1948.

keeping an informed and participating membership high on their list of problems.[14]

*Relations with the General Public*

In the early years, with few exceptions, the general public was disposed favorably toward cooperation. This attitude took concrete form in the passage of legislation favorable to cooperatives by both the state and federal governments. The Capper-Volstead Act, while not exempting cooperatives from antitrust prosecution, for all practical purposes made prosecution improbable. The federal government provided public funds for the Farm Credit Administration to aid cooperation with research and other services. It has actively participated in the formation of some cooperatives. In the legislation which provided for marketing agreements and orders, we have already seen that cooperatives received the permission to wield large degrees of monopoly power.

In most cases aid and public approval was extended to cooperatives under the assumption that a strong cooperative business helped maintain effective competition. Currently, the public appears to be in a state of indecision concerning cooperatives. Some of this has come about through the agitation over the income tax exemption privileges granted cooperatives.

Under strict legal interpretation, cooperatives as a business entity do not have income. They are, by definition, businesses which operate at cost. The earnings above cost belong to the individual member-owners and not to the association. Patronage refunds in the legal sense, as we have already noted, are either an adjustment for original underpayment in the case of marketing cooperatives or an adjustment for original overcharge in the case of a purchasing or service cooperative. As long as these earnings were returned to members in the form of cash patronage refunds there was little complaint. However, as has been mentioned previously, cooperatives increasingly tended to make refunds in the form of stock or ownership certificates and thereby retained these earnings in the association as growth capital. Thus, many cooperatives have accumulated large reserves tax-free, while their noncooperative competitors paid income taxes on their accumulations. This has led to the charge of unfair discrimination. No doubt, cooperatives must critically examine this whole area if they are to maintain their high standing in the public eye.[15]

[14] For an appraisal of the methods of member education see O. R. LeBeau and J. H. Heckman, *Patrons Appraise Cooperative Relations*, USDA, Farm Credit Administration, Circular C-140, 1951.

[15] The ramifications of the tax exemption controversy are purposely not treated here as being beyond the scope of a general cooperative survey. Rather voluminous writings on the subject are available for those wishing to explore the question further.

Some of the monopolistic practices of cooperatives have been hard to justify from the viewpoint of the public good. One of the principal contributions of a good cooperative is as a pace-setter and competitive prod to other businesses. Large cooperatives, however, like other businesses, often concern themselves with maintaining the "status quo." Several examples can be found of cooperatives fighting changes instead of spearheading an attack on their behalf. Such situations also cannot long receive the public blessing. Vigorous, well-run cooperatives have and can be a desirable competitive force. They can effectively improve, and often have improved, the services available to farmers. Such cooperative undertakings will continue to be a valuable asset to marketing.

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CHAPTER TWENTY-TWO

# *Government and Agricultural Marketing*

Many readers, when they arrive at this chapter, will start humming the tune, "Anything you can do, I can do better." For some it means that anything done by government can be done better by private business. For others it means that government can do most things better. The more accurate appraisal lies somewhere between the two extremes. The history of our government participation in marketing has been similar to a pendulum—sometimes swinging near one extreme, then reversing itself and swinging to the other side. In most instances, though, the search for the proper role of government has been motivated by the desire to maintain the type of competitive free enterprise system which will maximize the social, economic, and moral desires of our people.

Throughout this book, reference has been made to this or that law or agency. It is the purpose of this chapter to organize into some sort of logical framework the principal relationships of government to the operation of the marketing machinery. Most of the references are to the positions taken by the federal government. State and local government actions do have important effects on marketing, but because of their wide variation only general mention can be made.

In studying this chapter, we should always keep in mind that this is a highly controversial area. Laws are passed by legislative bodies, interpreted by the courts, and carried out and enforced by various administrative agencies. With interpretation by the courts through a period of time, the actual results of many laws may be far different from their original intent. In order to understand the full effect of governmental actions, one should

study both the original statutes and the interpretations which have evolved through the many court cases. Obviously such detail is beyond the scope of this chapter.

## AREAS OF REGULATION

The classification scheme which is used here is, of course, not the only one possible. To develop a set of pigeon-holes which will perfectly catalog governmental relationships to the marketing machinery is impossible.[1] The classification offered here is a broad one. For many observers, government relationships to agricultural marketing consist of that group of laws dealing directly with agricultural products and those handling them. This is too narrow a view. More and more people interested in agricultural marketing will have to concern themselves with broader aspects if they wish to come to grips with some of the more fundamental issues. The classification which we will use for discussion is as follows:

1. Regulations to maintain and police competition or prevent monopoly.
2. Regulations to control or offset monopoly conditions.
3. Regulations to facilitate trade and provide services.
4. Regulations to protect the consumer.
5. Regulations to directly affect commodity prices.
6. Regulations to foster economic and social progress.

### *Regulations to Maintain and Police Competition or Prevent Monopoly*

The fundamental economic proposition of the United States from its beginning has been that the desired economic organization should be operated primarily by individual, private, competitive enterprises. Out of this organization would come the maximum economic good for all. Throughout the first 100 years or so of our history it was basically assumed that such business organization was normal and automatic if government would just let things alone. However, with the price decline and economic troubles which followed the Civil War, public pressure forced investigation into charges of monopoly and collusion. A Congressional investigation into charges of collusion among the large meat packers was in part responsible for the Sherman Anti-Trust Act. This Act, which was passed in 1890,

[1] Others have developed classification schemes which are possibly equally helpful. See, for example: F. E. Clark and C. P. Clark, *Principles of Marketing*, 3rd ed. (New York, Macmillan, 1947), chs. 25 and 26; E. A. Duddy and D. A. Revzan, *Marketing*, 1st ed. (New York, McGraw-Hill, 1947), ch. 28; F. L. Thomsen, *Agricultural Marketing* (New York, McGraw-Hill, 1951), ch. 22; R. S. Vaile, E. T. Grether, and R. Cox, *Marketing in the American Economy* (New York, Ronald Press, 1952), ch. 34.

became the cornerstone of federal antimonopoly policy. It stated that "every contract, combination in the form of trust or otherwise, or conspiracy in restraint of trade or commerce among the several states, or with foreign nations is hereby declared to be illegal."

It was not enough, however, simply to declare actions illegal. The subsequent history of legislation in this area has been largely to determine what are "undesirable" or "unfair" methods of competition. Both the Clayton Act (1914) and the Federal Trade Commission Act (1914) started to spell out how firms should and should not compete in order to maintain competition. In 1936, the Robinson-Patman Act attempted to establish rules against price discrimination. Equal treatment must be given to all buyers unless the discounts can be shown to be derived from economies in manufacture, sale, or delivery. The intent of this latter law was to prevent large concerns from using their market power to secure unfair price advantage over their competitors.

With the development of large-scale retailing, the cry arose to protect the small retailer. Many states passed so-called "fair trade acts" which permitted manufacturers to control the retail selling prices of their products. In this way the large retailer was not permitted to undersell the smaller retailer if he wished to continue handling the manufacturer's products. These state regulations were made legal in interstate commerce by the Tydings-Miller Act (1937). This urge to protect the small operator also has resulted in the regulation of selling margins for many products. Many states prohibit the selling of products below "cost" or cost plus a stated margin.

The present status of such resale price maintenance laws is not certain. In 1951, the court held that resale maintenance as then practiced was illegal. Movement was quickly underway in Congress to repair the damage. The McGuire Act (1952) attempted to restore the legality of resale price maintenance. It was a touch of irony that the McGuire Act put the enforcement of price maintenance in the hands of the Federal Trade Commission which has been a vigorous opponent of the practice.

When one studies the trends in interpretation of the regulations in this area of maintaining and policing competition, it becomes obvious that there is considerable confusion as to what is desired. Monopoly is illegal. But a business does not run around with a sign on it saying, "I am a Monopoly"! Both the Robinson-Patman and the resale price maintenance acts have protected the "little fellow" as a way of maintaining competition. The resale price maintenance laws seem to take the additional position that numbers of business establishments are the key to desired competition.

Developments in this regulatory area are of real importance to agricultural marketing and can have an important effect on costs.[2]

*Regulations to Control or Offset Monopoly Conditions*

In some areas of the economy, it has been admitted that vigorous competition is not desirable. This is particularly true for public utilities, such as light, power, and telephone, and in other industries such as public transportation. The large fixed investments in these industries mean that competitive duplication would be very costly. For these industries, the attempt has been made to simulate the results of competition through public regulation. It was toward this end that the Interstate Commerce and Federal Communications Commissions were established. Such Commissions have been given regulatory powers—the most important of which is the supervisory power over rates charged. As pointed out in the chapter on transportation, the objective is to be "fair" to both the customer and the company. The legislation covering wage and labor relations would also probably fall within this general category.

In still other areas of the economy, Congress has recognized that weak and disorganized groups must do business with strong and concentrated industries. Or, in some cases, small and disorganized businesses are at the mercy of marketing forces, with wasteful or disruptive consequences to the public. In these instances, Congress has attempted to create "power balance" by granting organizing privileges which would otherwise be in violation of antitrust laws. The Webb-Pomerene Act legalized monopolies in the export trade. The Capper-Volstead Act recognized the legal right of farmers to act together cooperatively. The Agricultural Marketing Agreement Act (1937) provided that producers and handlers could band together to promote orderly marketing of their products. Under the provisions of this latter law have developed the federally supervised milk markets and the various fruit and vegetable marketing orders which regulate the amounts which are to be offered for sale. (Examples of these were discussed previously in Chapters 9 and 16.)

The balance between preventing unfair competition and monopoly and controlling or creating a counterbalancing monopoly is a delicate one indeed. The problems of adequate and intelligent enforcement of regulations in the former area are great. The danger in the latter area is that of creating monopoly power which may become more vicious than the situation is was intended to "balance."

[2] For a good discussion of the economic implications of resale price maintenance see Vaile, Grether, and Cox, *op. cit.*, ch. 21.

*Regulations to Facilitate Trade and Provide Services*

Falling within this general classification are many of the laws and regulations that have been mentioned in various other chapters. Laws to facilitate trade have attempted to create uniformity and reduce possibilities of fraud.

The Commodity Exchange Act provides the elimination of questionable practices and supervision of those dealing on futures exchanges (1922, amended 1936). The Packers and Stockyards Act (1921) sets up the supervisory machinery to control marketing practices and charges on terminal livestock markets. The United States Warehouse Act (1916) provides for the licensing and supervision of warehouses and their operations. The Produce Agency Act (1927) attacks fraudulent practices of commission agents and brokers. The Perishable Agricultural Commodities Act (1930) provides for the licensing of commission men, dealers, and brokers handling fresh fruits and vegetables. All of these laws have attempted to establish standards of practice and operation of markets and men operating on these markets.

There have been many laws passed affecting the product and its handling. Laws regulating weights and measures of containers have aimed for uniformity in this important area. There have also been a series of acts which established the authority of the United States Department of Agriculture to study and promulgate standards and grades for agricultural commodities.

Legislation has established the market news service and the various grading and inspection services. Another series of laws have sanctioned the collection and dissemination of statistics of various commodities and the agricultural census.[3]

Much federal legislation can affect only those commodities which enter into interstate commerce. Therefore, in most of these fields states have evolved counterpart legislation to cover trading within the several states.

*Regulations to Protect the Consumer*

There has been some recognition that in a modern, complex society the consumer cannot possibly be expected to have complete knowledge about all his multitudinous purchases. Regulations in this area generally strive to assure adequate and accurate information so that the consumer

[3] A valuable reference list of laws is the *Abridged List of Federal Laws Applicable to Agriculture*, USDA, Office of Information, Mimeograph No. 2, 1950.

can make informed decisions and to protect the consumer from products and practices which might harm him.

The principal regulations in this area were initiated by the Federal Food and Drug Act (1906, expanded 1938) along with the related laws of the states. Generally, the purpose of this law is to prevent shipments of adulterated or misbranded foods, drugs, and cosmetics. The administrator of the Act also has the power to establish minimum quality and fill of container for most packaged goods. The law provides for labeling of contents. The use of food preservatives, artificial coloring, and so on are under the administrator's jurisdiction.

The Wheeler-Lea Act (1935) sets up a code of ethics for advertising. It makes false and deceptive advertising an unfair method of competition and thereby illegal. The Meat Inspection Act (1907) authorizes inspection of animals, meats, and packing establishments to assure that products will be fit for human food. Also, individual state and local governmental units have set up required health standards for milk and milk processing and for various slaughtering and food processing facilities.

To a great extent it is because of these various laws that the consumer can depend upon the weight, volume, and content labels of the food he buys. He can learn the fiber content of his clothes. He can have some assurances that in this age of new chemicals, someone is watching out for his health and well-being.

The dividing line between protector and dictator is a fine one. The intent of these laws has been to protect the consumer from fraud and danger which he reasonably could not detect for himself and to give him knowledge upon which to make wise decisions. There is always the danger that such regulations may be administered in such a way as to actually make the choice for the consumers. Such interpretation may stifle change and initiative if industry must serve the administrator instead of the consumer. It should not be the role of these regulations to decide what is best. That decision should always be left to the consumer himself. Regulations should provide the basis for informed consumer action. Beyond this point the consumer should go the road alone.

*Regulations to Directly Affect Commodity Prices*

When governmental units assumed the obligation to control and offset monopolistic conditions, the necessity to supervise prices of these controlled industries followed. Railroad rates, public utility charges, livestock yardage, commission fees, and a great many other prices and fees have been brought under the supervision of government. Originally, the place of government was assumed to be largely one of supervision. How-

ever, with the advent of two major wars and a drastic depression within the short span of thirty years, actions have been taken to directly establish prices of individual commodities.

Much of the agricultural price and income legislation already has been discussed in Chapter 9. It should merely be reviewed here that with the establishment of the Federal Farm Board in 1929, a long succession of laws has firmly established the federal government as an active participant in determining farm prices. In addition to such direct farm price regulations, provisions have been made to reduce the price of food to certain groups of people. The Food Stamp Program and the passing of the National School Lunch Act (1946) are illustrative of such developments.

Of equal importance has been the acceptance of the validity of the place of government in controlling prices throughout the whole economy. Legislation established the Office of Price Administration (OPA) during World War II and the Office of Price Stabilization (OPS) during the Korean War. Under these agencies, prices of commodities and services at all levels in the marketing system were controlled.

The impact of such regulations upon marketing is obvious. With the power to regulate margins and prices, the government in effect assumed the power to regulate the operation of all phases of the marketing structure. It was in a position to favor one type of market or product over another. Using its powers, it effected such marketing changes as every-other-day delivery of milk, the reduction of the kinds and types of packaging, the expansion of federal meat grading, and so forth. Agricultural price regulations also affected marketing channels used, places of storage, and other details of the marketing process.

### *Regulations to Foster Economic and Social Progress*

Each group which pressures for preferential legislation generally justifies its actions as being necessary for economic and social progress. Usually such laws fit better into one of our other categories. However, there have been legislative developments which have addressed themselves specifically to the general purpose of "holding the carrot in front of the horse," so that our economy will have the push and urge to move forward.

Patent and copyright laws give the innovator a monopoly for a period of time so that he may reap personal gain from his efforts. Such an incentive system, which had a long history in English law, was recognized by our Constitution and definitely set forth in the original patent act of 1790.[4]

[4] For a more complete discussion of the patent problem, see George Stocking and Myron Watkins, *Monopoly and Free Enterprise* (New York, Twentieth Century Fund, 1951), ch. 14.

The original intent was to give to the innovator the right of monopoly exploitation for seventeen years, after which the innovation was to become available to the public for general use. Such incentive for gain has no doubt fostered development. But as with other regulations, abuse is possible. Through legal manipulations, protection can be extended well beyond the statutory seventeen years. There is record of one inventor successfully maintaining his exclusive rights for fifty-three years.[5] There is also evidence that patent and copyright privileges are being used today to prevent someone else from working in given fields and making discoveries which might destroy the current business power of the involved firms. Such actions, of course, do not encourage progress but retard it. With increasing food processing and more synthetic products, patent and copyright provisions are of growing importance in the marketing of farm products. The challenge is how to furnish incentive for the continuing parade of new and better things and methods without, at the same time, preventing the active search for improvement by anyone in any area of endeavor.

Another very important group of laws is that providing for public support of education and research.[6] In 1862, Congress established the Department of Agriculture. The Morrill Land-Grant College Act (1862) provided the basis for our extensive system of government-supported higher education. This was followed by the Hatch Act (1887), which provided for the establishment of agricultural experiment stations in conjunction with the land-grant colleges.

In 1914, the Smith-Lever Act broadened the educational system in agriculture by establishing the agricultural extension system. Now, through a widespread system of county agents and various types of trained specialists, the findings of the experiment stations are quickly brought to the farmers' attention. This Act was followed in a few years by the Smith-Hughes Act which provided federal support for teaching vocational agriculture in the public schools. In 1953 there were over 10,500 vocational agricultural teachers and over 5,250 county agents at work in the United States. Our agricultural research-educational team today is the envy of the world.

This educational and research structure has been augmented by a long series of laws making monies available for research in specific areas. Early work was aimed largely at farm production problems. However, the Research and Marketing Act of 1946 laid the groundwork for a broad research

[5] Stocking and Watkins, *op. cit.*, p. 458.

[6] An excellent report, "Organization of Agricultural Research in the United States, Questions and Answers," was issued as a Mimeograph by the USDA, Agricultural Research Administration, July, 1950.

attack on marketing problems. One very pertinent contribution of this legislation has been to expand the horizons of agricultural marketing research and extension beyond the point of first sale. The complete producer-to-consumer area is now recognized as the field in which to work. Official recognition now has been given to the fact that the actions of food processors, wholesalers, and retailers are the business of those who are concerned with agricultural marketing. To a large degree, the improvements in marketing will depend upon research progress in this enlarged area of study.

Governmental agricultural research is carried on at about 400 field locations including federal field stations and laboratories and cooperative work at the individual state experiment stations. The states maintain about 325 research centers including experiment stations and substations. Together the federal and state governments employ over 10,000 agricultural research scientists. The general framework for financing agricultural research consists of the states matching the federal appropriations. The following quotation from a report issued by the Federal Agricultural Research Administration illustrates the point:

> Federal appropriations for agricultural research during the fiscal year 1950 approximated $59 million of which $47 million was allotted to USDA agencies and $12 million was made available to state agricultural experiment stations as federal grant funds. The states themselves provided more than $40 million which averaged about $3.50 for each $1.00 received from federal grants.

### *The Problem of Perspective*

After the above brief and incomplete survey, we can now return to the initial questions of the where, the what, and the how much of regulation. Careful, unbiased thought brings the conclusion that there is a real place for government regulations and laws. Often it is not the intent of regulations, but their enforcement and administration, which causes trouble. The role of government is not passive or static. Nor does the fact that certain laws are on the books make them currently good or adequate laws. A progressive economy is one of change. Legislation once considered vital may no longer be useful. New developments may bring about the need for new regulations even in fields where such actions were once considered improper.

Value judgments change. The trend has been toward increasing the area of governmental influence. One of the real problems in marketing is the job of appraising the "proper" solution. Workers in agricultural marketing must accept this task of appraisal in all the areas of possible regulation and not just those which apply directly to agriculture.

## UNITED STATES DEPARTMENT OF AGRICULTURE[7]

The United States Department of Agriculture has the assigned role of a service agency for the agricultural industry. It administers many of the laws discussed previously. It actually operates many service agencies. It directs and coordinates research. No worker in the field of marketing can adequately do his job and not be familiar with it at least in a general way.

The USDA is a huge organization. Not all of its facilities or its employees are located in Washington, D. C. Some of its agencies are very important to those interested or working in marketing; others are more directly concerned with production and other phases of agriculture. We shall discuss briefly many of these various agencies and give the highlights of what they do. No attempt will be made to show organizational lines of authority or to give an indication of relative size.

### *Agencies of General Interest*

There are several agencies of general interest to anyone interested in agriculture. Important ones of this nature are the Office of Information, the Office of Experiment Stations, and the Extension Service.

By addressing inquiries to the Office of Information, USDA, Washington 25, D. C., one can either secure, or find out where to secure, any information which the Department may have on a particular question. This is the agency responsible for the integration and coordination of all USDA activities. The purpose of the USDA is to be of service to agricultural workers. A note sent to the Director of Information often saves hours of fruitless searching.

The Office of Experiment Stations and the Extension Service are almost self-explanatory. The former is largely an administrative agency coordinating the work of the experiment stations in each of the forty-eight states, Alaska, Hawaii, and Puerto Rico. The Extension Service serves much the same purpose for the extension education programs of the Department and the states.

### *Agencies of Specific Marketing Interest*

Though nearly all agencies are involved in marketing problems at one time or another, the Agricultural Marketing Service (AMS) is of special

[7] The following processed reports will give a much more complete picture of the growth and work of the USDA: *Some Landmarks in the History of the Department of Agriculture*, USDA Agricultural History Series No. 2, 1951, and later issued in an abridged form as USDA Document No. 8, February, 1953; *Origin, Structure, and Functions of the U. S. Department of Agriculture*, USDA Document No. 1, February, 1952.

importance.[8] The AMS is the central source agency for a great deal of the material of interest to students of marketing.

In order to cover its field, the AMS is divided into several divisions. The Divisions of Marketing Research and Agricultural Economics carry on research in all phases of marketing and all other economic, analytical, and statistical work with the exception of farm management and land use. The Agricultural Reporting Division supervises the crop reporting and market news services of the Department. Other divisions of the Service are given the responsibility to carry out many of the supervisory and action programs of the Department. For example, the administration of marketing orders, the Packers and Stockyards Act, the Commodity Exchange Act, and the operations of the school lunch program are under the supervision of AMS.

The Division of Human Nutrition and Home Economics in the Agricultural Research Service is one of specific marketing interest, since its area of research interest, among other things, is that of human nutrition and food consumption. Studies on nutritional standards, composition of various foods, and family food consumption are made by this agency.

The Farm Cooperative Service is the source agency for information on agricultural cooperatives. It carries on a research program covering all aspects of agricultural cooperation. It also advises farm groups on the practicability of setting up new cooperatives.

The Foreign Agricultural Service is responsible for the compiling and interpretation of information relating to foreign agriculture and trade. It is the principal source agency for information dealing with our foreign agricultural relations.

The Commodity Stabilization Service is charged with the responsibility for establishing and administering the acreage allotments and marketing quotas when these are necessary in the operation of our price support programs. The loan and storage activities of the Commodity Credit Corporation (CCC) are also carried on by this agency.

### *Agencies of Limited Marketing Interest*

The activities of many agencies are of limited or side-line interest to those concerned with marketing. Many of these are divisions of the Agricultural Research Service (ARS). The Divisions of Crop Research and Livestock Research continually are at work on new crop varieties, produc-

[8] As of November, 1953, the Department of Agriculture was reorganized. Some of the old agencies lost their identity and new ones were created. The Agricultural Marketing Service was one of the newly created agencies. It incorporated most of the activities of the old Bureau of Agricultural Economics (BAE) and many of the activities of the old Production Marketing Administration (PMA). This fact is mentioned since many older studies of value continue to carry BAE and PMA designations.

tion methods, improved methods of insect and disease control, and so on. The Utilization Division is active in experimentation which may lead to new products and new uses for agricultural commodities. We now should realize that production cannot be realistically separated from marketing, so all of these activities can have a real influence on marketing.

The Agricultural Research Service also has certain regulatory responsibilities. The Animal Quarantine Act, the twenty-eight-hour transportation law for livestock, the meat and poultry inspection work, and the insect control and eradication work all come under its supervision. Many of these activities are of direct concern to marketing agencies.

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CHAPTER TWENTY-THREE

# *Food Processing Industries*

Since the farmer sells raw materials which must often be processed further into food products, a study of marketing must consider the part which these food processors play in the over-all marketing processes.[1] The definition of marketing which we developed in Chapter 1 excluded the creation of form utility. The manufacturing processes of food processors are concerned with the addition of value which comes from the changing of form. Wheat is milled into flour. Livestock is converted into meat. Fresh vegetables are processed into the canned product. However, as we mentioned in the discussion of marketing institutions in Chapter 2, these activities are only part of the activities of food processors. They also perform to a variable extent some of the marketing functions. They are not a passive element in the marketing channel. They buy and sell products. They may have vertically integrated themselves until they act institutionally in wholesaling capacities. And because they are often the largest and best informed business aggregate in the marketing channel, they play an important role in the all-important activities of pricing. We have already studied some of these processor activities in our commodity discussions. The purpose of this chapter is to bring together these various industries so that we can obtain a better picture of the over-all structure of food processing.

## THE INDUSTRY STRUCTURE

Food processing is a multi-billion dollar industry. In 1947, output of the food industries as measured by the value added accounted for one-

[1] Most of the statistical data used in this chapter were taken either directly from the United States Census of Manufacturing, 1947, or from Allan B. Paul's excellent statistical summarization of these data, *The Economic Structure of the Food Processing Industries* and *Changes in the Food Processing Industries from 1939 to 1947*, Illinois Mimeographs FT5 and FT27.

eighth of all manufacturing output in the country.[2] About one-sixth of all manufacturing plants is engaged in processing food and related products. These plants employ one-tenth of the workers engaged in manufacturing.

The data in Table 1 show the relative importance of the various food industries. From the standpoint of the number of establishments and production workers and the amount of value added, the industries making grain products lead the list. The sweets industries depend heavily on imported products such as sugar and cocoa and to a lesser extent on the products of domestic agriculture. Other major industries are those associated with meat, fruits and vegetables, and dairy products. These industries processing grain, meat, fruits and vegetables, and dairy products account for two-thirds of the output of the food industry.

TABLE 1. *The Food Processing Industry, 1947*

| | NUMBER OF PLANTS | NUMBER OF PRODUCTION WORKERS (THOUSANDS) | VALUE ADDED BY MANUFACTURE | |
|---|---|---|---|---|
| | | | MILLION DOLLARS | PERCENT OF TOTAL |
| Grains (milled products, malt, liquor, baked products, cereals, macaroni and spaghetti, rice and corn products) | 9,676 | 341.7 | 3,477.6 | 40.2 |
| Sweets (candy, soft drinks, cane and beet sugar, chocolate, flavorings, chewing gum) | 8,159 | 157.3 | 1,399.9 | 16.2 |
| Meats (packed meats, prepared meats, dressed poultry) | 3,974 | 220.8 | 1,280.7 | 14.8 |
| Fruits and vegetables (canned products, quick-frozen foods, vinegar, wines, pickles, dehydrated products) | 3,981 | 166.7 | 908.4 | 10.5 |
| Dairy products (ice cream, butter, cheese, concentrated milk, plastic cream) | 5,933 | 81.3 | 630.2 | 7.3 |
| Oilseeds (cottonseed and soybean oil milk, shortening and cooking oils, oleomargarine) | 575 | 24.8 | 415.8 | 4.8 |
| Miscellaneous products (sea foods; leavening compounds; liquid, frozen, and dried eggs; other nonclassified processed foods) | 2,508 | 67.2 | 536.3 | 6.2 |
| Total | 34,806 | 1,059.8 | 8,648.9 | 100.0 |

[2] Value added is a measure of manufacturing output. It is the value of sales minus the cost of raw materials purchased. As such, it attempts to measure the value of the conversion or processing done.

TABLE 2. *Geographic Distribution of Selected Food Processing Industries, 1947*

| SELECTED INDUSTRY | NEW ENGLAND | MIDDLE ATLANTIC | EAST NORTH CENTRAL | WEST NORTH CENTRAL | SOUTH ATLANTIC | EAST SOUTH CENTRAL | WEST SOUTH CENTRAL | MOUNTAIN | PACIFIC |
|---|---|---|---|---|---|---|---|---|---|
| | PERCENT OF U. S. TOTAL VALUE ADDED | | | | | | | | |
| Flour milling | 0.1 | 12.6 | 14.8 | 38.3 | 4.4 | 4.5 | 12.2 | 4.3 | 8.8 |
| Bread, rolls, pastries | 7.9 | 28.1 | 22.5 | 8.4 | 10.1 | 3.7 | 6.5 | 2.4 | 10.4 |
| Biscuits, crackers, pretzels | 4.2 | 32.9 | 25.7 | 11.6 | 7.1 | 2.6 | 4.8 | 2.2 | 8.9 |
| Breakfast cereals | 0.5 | 16.8 | 61.3 | 18.8 | 0.2 | 0.3 | 0.3 | 0.5 | 1.3 |
| Meat packing | 1.7 | 10.6 | 27.7 | 34.3 | 5.0 | 3.3 | 7.2 | 3.0 | 7.2 |
| Prepared meats, sausage | 7.9 | 21.8 | 36.8 | 9.6 | 7.2 | 3.1 | 4.7 | 0.9 | 8.0 |
| Poultry dressing | 1.6 | 4.5 | 6.3 | 46.2 | 20.0 | 2.2 | 5.5 | 2.8 | 10.9 |
| Fruits and vegetables: canning, preserving | 2.3 | 21.5 | 22.2 | 3.6 | 10.4 | 1.1 | 3.3 | 1.9 | 33.7 |
| quick-frozen | 10.3 | 18.7 | 6.7 | 2.7 | 7.3 | 2.3 | 5.2 | 2.4 | 44.4 |
| Butter | 0.2 | 2.0 | 26.6 | 43.9 | 2.2 | 5.8 | 4.1 | 5.6 | 9.6 |
| Natural cheese | 1.5 | 9.2 | 57.2 | 9.5 | 0.3 | 7.0 | 3.1 | 5.9 | 6.3 |
| Canned and dried milk | 1.0 | 7.5 | 50.0 | 12.2 | 5.0 | 7.9 | 2.1 | 3.5 | 10.8 |
| Oleomargarine | — | 23.8 | 33.0 | 9.6 | 8.8 | 2.2 | 4.4 | — | 18.2 |
| Candy products | 9.5 | 28.0 | 37.3 | 5.5 | 5.6 | 1.9 | 3.2 | 1.5 | 7.5 |
| All food manufacturing | 4.0 | 21.2 | 27.2 | 13.2 | 7.4 | 5.7 | 6.6 | 2.6 | 12.1 |

*Location of Food Processing*

Though food processing is done to some extent throughout the country, nearly two-thirds of the total output comes from the Middle Eastern and North Central regions. Table 2 shows the location of various industries in terms of percentage of output by state groupings. The leading area has been underscored.

Several factors influence the location of industry. Some of the more important are (1) the bulkiness of the raw material compared with that of the finished product, (2) the perishability of the raw material compared with that of the finished product, and (3) the institutional considerations such as freight differentials, labor supply, consumer peculiarities, and historical development. Many of the location patterns can be explained by these factors. For example, milling takes a very bulky raw product, grain, and converts it into a more concentrated product, flour. Thus, half of the industry is located in the West North Central and the West South Central production regions near the source of the grain. The concentration in the Middle Atlantic states can be explained largely by the freight rate structure. On the other hand, the bread industry which utilizes a nonperishable product, flour, to make a highly perishable product, bread, is concentrated in the areas of heavy consumer population. The location of the meat packing industry follows the area of livestock production closely with the exception of a sizable portion located in the Middle Atlantic states. The special fresh meat requirements of the kosher trade, along with some other historic factors, help explain much of this diversion from the production area. The perishable nature of fruits and vegetables dictates that a major part of the fruit and vegetable processing industry be located in the Pacific states near the principal production areas.

*Organization and Firm Size*

Many people like to think of the food industry as the stronghold of small, individual entrepreneurs. For example, your author has heard responsible persons in the meat packing industry talk about the small-scale, competitive nature of the industry, for, "after all, anyone can go out under a tree and butcher a steer"! Such statements may not be false, but they are misleading. In general, there is not too much difference between organization and size of the food processors and other types of industry.

Table 3 compares the food industries with all manufacturing industries as to types of organization and ownership. It is the similarities, not the differences, which are striking. About three-fifths of the total output of both the food and other industries is from companies which operate more

than one plant. Nearly nine-tenths of the output comes from plants organized as corporations. Though nearly half of the units are owned individually or by partners, this group accounts for less than 10 percent of the total food industry output.

TABLE 3. *Organization and Ownership of Industry, 1947*

| INDUSTRY CLASSIFICATION | TYPE OF ORGANIZATION | | TYPE OF OWNERSHIP OR CONTROL | | | |
|---|---|---|---|---|---|---|
| | MULTI-UNIT * | SINGLE UNIT | CORPORATE | INDIVIDUAL | PARTNERSHIP | OTHER † |
| | PERCENT OF TOTAL | | | | | |
| Food industry: | | | | | | |
| Number of establishments | 24 | 76 | 49 | 27 | 20 | 4 |
| Value added | 61 | 39 | 89 | 4 | 5 | 2 |
| All U. S. industry: | | | | | | |
| Number of establishments | 15 | 85 | 49 | 29 | 21 | 1 |
| Value added | 59 | 41 | 92 | 3 | 5 | ‡ |

* Operation of more than one manufacturing unit from a central administrative office.

† Includes cooperatives, receiverships and trustees, and public ownership.

‡ Less than 1 percent.

Food processors, similar to many other American industries, have been undergoing considerable integration—both vertical and horizontal. Table 4 gives an indication of the amount of concentration of ownership in various food manufacturing fields. In studying the concentration of all American industry, the Federal Trade Commission classified thirteen industries as having "extreme" concentration. The biscuit and cracker and the meat packing industries were in this classification. Six major industries

TABLE 4. *Concentration in the Ownership of Food Processing Facilities, 1947*

| INDUSTRY | PERCENT OF NET ASSETS OWNED BY LEADING THREE CORPORATIONS |
|---|---|
| Biscuits and crackers | 67.7 |
| Meat packing | 64.0 |
| Dairy products | 55.8 |
| Canning and preserving | 32.0 |
| Grain mill products | 30.2 |
| Bread and pastries | 25.4 |

SOURCE: Federal Trade Commission Report on Concentration of Productive Facilities.

were considered as having "high" concentration. Dairy products fell in this category. The grain mill and canning industries were put along with three other industries into the group considered as having "moderate" concentration.

There is a great variation in the size of the individual firms. Table 5 breaks various industries down into size groups as measured by number of employees. The number of firms and amount of the output of each of these size groups are shown. A great many firms in all of the various industries could be classified as small businesses. However, this relatively large group often contributes very little to the total output of the industry. For example, our gentlemen who made reference to the small-scale nature of the packing industry was right in one sense—nearly half of the meat packing firms have under ten employees. What he did not add was that this large group accounts for under 5 percent of the total output of meat packers. Only 2 percent of the packing establishments have over 1,000 employees—but these 2 percent account for nearly half of the industry output. Considering the total food industry, the 4 percent of the firms employing 250 or more people produce 60 percent of the total output.

A close study of Table 5 will show a great difference in the size pattern of production units of different food processors. Much of this variation can be explained by one or all of three different factors: (1) supply problems including both the characteristics of the raw product and its production, (2) finished product problems, and (3) the nature of the manufacturing process itself, especially as to the degree and kind of mechanization possible.

Cereal manufacturing, the biscuit and cracker industry, and meat packing all have large portions of the output coming from very large firms. These are industries which have utilized assembly-line, continuous-operation principles. They do not have particular limiting problems on either their supply of raw materials or distribution of their finished products. On the other hand, two-thirds of the butter output and over four-fifths of the cheese output come from plants employing less than fifty people. The assembly of the raw product, milk, as well as the small unit nature of butter and cheese machinery, favors the small-scale plant. The baking industry tends to favor the moderate-sized plant. At least part of the size-limiting factor in this industry is the distribution of its product. With the emphasis on bakery goods which are fresh daily, the marketing area of a given plant is limited.

The size structure of the food industry has changed and will continue to change. New technology is changing both the assembly and distribution problems of plants. The areas in which it is economically feasible to secure

TABLE 5. *Relative Importance of Different-Sized Firms in Selected Food Processing Industries, 1947*

| INDUSTRY | NUMBER OF EMPLOYEES 1–9 | 10–49 | 50–249 | 250–999 | 1,000 AND OVER |
|---|---|---|---|---|---|
| | PERCENT OF TOTAL | | | | |
| All industry: | | | | | |
| Number of firms | 49 | 33 | 14 | 3 | 1 |
| Value added | 3 | 12 | 25 | 27 | 33 |
| All food industries: | | | | | |
| Number of firms | 50 | 36 | 12 | 2 | * |
| Value added | 5 | 18 | 36 | 26 | 15 |
| Grain: | | | | | |
| Flour milling | | | | | |
| Number of firms | 58 | 25 | 15 | 2 | — |
| Value added | 3 | 15 | 60 | 22 | — |
| Cereal manufacturing | | | | | |
| Number of firms | 42 | 25 | 19 | 9 | 5 |
| Value added | * | 3 | 11 | 42 | 44 |
| Baking (selling to grocers) | | | | | |
| Number of firms | 44 | 34 | 20 | 2 | — |
| Value added | 3 | 17 | 58 | 22 | — |
| Biscuits, crackers, pretzels | | | | | |
| Number of firms | 30 | 29 | 24 | 17 | |
| Value added | 1 | 3 | 18 | 78 | |
| Meat: | | | | | |
| Meat packing | | | | | |
| Number of firms | 44 | 35 | 15 | 4 | 2 |
| Value added | 3 | 10 | 19 | 21 | 47 |
| Poultry dressing | | | | | |
| Number of firms | 29 | 49 | 21 | 1 | — |
| Value added | 4 | 29 | 47 | 20 | — |
| Dairy: | | | | | |
| Butter | | | | | |
| Number of firms | 68 | 27 | 5 | — | — |
| Value added | 22 | 43 | 35 | — | — |
| Natural cheese | | | | | |
| Number of firms | 82 | 16 | 2 | — | — |
| Value added | 44 | 39 | 17 | — | — |
| Concentrated milk | | | | | |
| Number of firms | 27 | 46 | 27 | — | — |
| Value added | 4 | 28 | 68 | — | — |
| Fruits and vegetables: | | | | | |
| Canning and preserving | | | | | |
| Number of firms | 24 | 48 | 24 | 4 | * |
| Value added | 1 | 14 | 38 | 31 | 16 |

* Less than 0.5 percent.

or to distribute products are continually expanding or contracting. Mechanization of the food industry is also increasing. Continuous processing techniques, improved product quality control, and new machinery are all

making larger production units possible, which in many instances in the past were severely limited in size.

The historical development of our country has left its mark on the various food industries. As the country has expanded its agricultural production into new geographic areas, many of the processing industries also have had to move. This has resulted in unused, excess capacities and high costs in the firms which were left operating in old areas.

The grain milling industry is a good example of an industry which has undergone considerable movement. Milling first developed in the Atlantic Coastal states. Here it was near both wheat supplies and the water power to operate the mills. Then, as new wheat areas farther west were opened, Cincinnati and afterward St. Louis became important milling centers. With the growth of wheat production in the Northwest during the first years of the twentieth century, Minneapolis developed into the nation's leading milling center. Then as the wheatlands of the Southwest were opened, Kansas City rose in importance. Finally, a change in the freight rate structure in 1920, plus the growing opportunity to mill Canadian wheat, led to the growth of the Buffalo, New York, mills. As each of the gradual changes took place, much mill capacity was left in the declining area. Today, it is the usual situation for the milling industry to operate at levels much below total capacity.

The East Coast packing industry to some degree is the vestigial remains of the earlier years before the development of the livestock industry in the mid-west. At first much livestock was shipped to the East alive for slaughter. The end product, meat, was so perishable that processing had to be done near the centers of consumption. However, with the development of the refrigerator car, Chicago and other mid-western cities became important packing centers. The packing industry in the past two decades has again followed production into the western part of the corn belt. Today, there is excess and unused slaughter capacity in many of the major terminals of the eastern corn belt, such as Chicago.

The fact that the country is now completely settled will not protect industries against location change. New refrigeration, transportation, and other technological developments will continue to change existing patterns. For example, new developments in whole milk transportation are tearing down the past barriers which restricted milk collection and distribution to relatively limited areas. The dairy products manufacturing structure which was built upon the limited areas of supply and demand no doubt will also undergo change.

Another capacity problem of the food industries is seasonal in nature. Table 6 indicates the amount of production seasonality associated with

various industry groups. Generally, industries like the canning industry, which processes seasonally produced, perishable commodities, are highly seasonal in their operations. Some industries, such as the confectionery group, have a seasonal demand. On the other hand, those industries whose supply of raw materials is either more constant or storable operate with less seasonal variation. This is illustrated in the meat packing, flour milling, and baking industries.

TABLE 6. *Seasonality of Operation in Selected Food Industries, 1947*

| INDUSTRY | NUMBER OF EMPLOYEES | |
|---|---|---|
| | HIGH MONTH | LOW MONTH |
| | PERCENT OF 12-MONTH AVERAGE | |
| All industries | 102 | 97 |
| Food and related products: | 115 | 91 |
| Canning and preserving | 205 | 62 |
| Poultry dressing | 131 | 78 |
| Confectionary products | 123 | 88 |
| Natural cheese | 114 | 86 |
| Concentrated milk | 111 | 88 |
| Creamery butter | 107 | 93 |
| Meat packing | 109 | 96 |
| Biscuits, crackers | 108 | 94 |
| Flour milling | 103 | 97 |
| Bread and bakery products | 101 | 97 |

## FOOD INDUSTRIES AND MARKETING

### *Buying Operations*

All manufacturers are faced with supply problems. Any manufacturer desires to assure himself of an adequate amount of the desired kind and quality of raw material at the lowest possible price. He may depend either upon other marketing agencies to do this purchasing for him or he may undertake to set up his own procurement machinery. One of two considerations may force the processor to become his own assembler. He may be dissatisfied with the operation of the existing agencies which are supposed to serve him. They may be "dragging their feet" in making improvements or otherwise operating inefficiently and at high cost from the manufacturer's viewpoint. Or the processor may wish control over the machinery for his own competitive safety or to make his buying power a more effective price-affecting force.

Food processors utilize a wide variety of ways to procure their materials from farmers. Generally, meat and poultry processors use the

existing independent agencies to secure their supplies. Many packing firms, of course, operate their own country buying points. However, the large majority of assembly agencies for livestock and poultry operate largely independently of slaughterers and packers. To a considerable extent, the grain milling industries also depend upon the independent country elevator operators and terminal market merchants for the procuring of grain from the farmer. However, some millers have become owners of elevators in the production areas. One corn products manufacturer who has developed a special variety of corn which best satisfies his needs contracts directly with farmers for its production.

Butter, cheese, and other milk product manufacturers, on the other hand, are their own country buying and assembly agencies. They often operate their own truck routes to pick up milk at the farms. Canners are also direct country buying agencies as well as processors. They often contract with the farmer for the products in advance of planting. In this way both price and some indication of amount available for processing are established in advance.

*Selling Operations*

As in procurement, a processor is faced with the necessity of choosing between alternative methods of selling the finished product. He may either utilize the existing independent wholesale channels or set up his own sales organization to distribute his product directly to retailers.

It is probably true that food processors have been more interested in securing direct control over the selling phase of their operations than the buying phase. But here again, industries vary in the direction they have taken.

The meat packing industry, for example, has largely become its own wholesaler. It is handling a perishable commodity which has wide fluctuations in volume over a short period. In order to keep such a product moving effectively, packers consider it imperative that they have control of the distributive channel through to the retailer. Independent meat wholesalers handle a relatively small volume.

The milling industry offers a good illustration of the way an industry adapts itself to changing conditions. Originally flour millers shipped their flour on consignment to commission men in the consuming areas. These commission men sold and delivered the flour to retail stores who were their principal customers. However, abuse by some unscrupulous commission men gave rise to flour brokers. The broker acted as the sales agent of the miller, but the miller himself kept control of the transportation and delivery arrangements. Then came the widespread movement away from

home baking and the rise of large commercial bakeries. Bakers, not retail stores, became the principal flour consumers. This development of relatively large volume customers caused the miller again to revamp his selling methods. Now large millers, like the packers, set up their own wholesaling organization with direct salesmen and strategically located branch houses to facilitate delivery.

Though the processing units for butter and cheese are small, many have grown into large organizations with their own wholesaling setup. The large-scale canners have also developed their own wholesaling organization to sell directly to retailers. However, the small independent canner cannot afford his own selling organization. He must depend upon independent brokers and commission men to sell his products.

*Agencies for Effecting Change*

The food processing industry, then, is a highly diverse structure made up of many different groups. It is similar to other American industries in its form of business organization. It is also characterized by a relatively small group of firms accounting for a large portion of the total output.

The differences of the various industry groups are reflections of the struggle to adapt to product and technological peculiarities. It is no more logical to expect the meat processing industry to be like the canning industry than to expect the soap industry to be like the drug industry. Some food industries handle products with highly seasonal supplies or demands. Some buy or sell nonperishable, others handle highly perishable, products. Some are highly mechanized, others require large amounts of human labor and supervision. These differences reflect themselves in where the industry is located, how large the individual firms are, and the attitude which the industry takes to other agencies in the marketing channel.

Processing industries are both buyers and sellers of products. As such, they are part of the agricultural marketing picture. Often processors are the most important single group influencing the operation of the whole marketing structure. It is true that the food industries are most interested in securing their incomes from the performance of their manufacturing and converting operations. But successful operational margins require that the raw material be purchased and the finished food sold in a way which is advantageous to the processor.

Very few processors, indeed, assume a passive role in marketing. Producers often are small and disorganized. The same is often true of retailers and consumers. But the processing firms are usually not small and very seldom are disorganized. A review of the long list of trade associations will show that nearly each food group has some form of organization.

Wholesalers, brokers, commission men, and other agencies many times may be persuaded to change their operations through appropriate pressures exerted by the processors. The active support of processors is usually needed to secure changes in trade practices, grades and standards, and the like. For example, in our discussion of livestock marketing, we saw the problems involved in encouraging the production of meat type hogs. When major packers take an active interest through their buying practices, progress in this field will be much more rapid. Technological problems and innovations in processing may often place the processors in the role of advisors to farmers as to kind and variety of product most needed. New and complex products may place the processors in the role of advisors to other processors, wholesalers, and retailers as to how their products can be used best. Dupont has to educate and advise others how to use its new synthetic fibers to their best advantage. The processors of quick-frozen foods were active in advising handlers as to the proper equipment needed to assure that the product would be of good quality when finally purchased by consumers. Processors themselves initiate much of the consumer advertising which is used by retailers.

The relative size and concentration of food processors also have led to many accusations of monopolistic practices. Many segments of our food industry have been brought before the courts, and in some instances convicted, for unlawful and collusive practices throughout the years. Regardless of the legal aspects, there is little doubt that many of the elements of imperfect competition which were discussed in Chapter 7 exist in the food industries.

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CHAPTER TWENTY-FOUR

# Wholesaling and Retailing of Food

We have discussed in the various commodity chapters the operations of the various kinds of wholesalers and commission agents who buy and move commodities from farmer producers into the hands of food processors and other central market agencies. This group, including such agencies as livestock buyers and commission men, local grain elevators, and poultry and egg buyers, is active in the major marketing process of concentration. In the previous chapter we discussed the role which food processors may play in both the buying of farm commodities and the selling of their food products. In this chapter we shall complete our description of the chain of marketing events which occur in moving products from producers to consumers by summarizing some of the more important characteristics and changes which have taken place in the food wholesaling and retailing structure.[1] The basic distribution structure serving the consumer end of the line can be shown diagrammatically as on the following page.

## FOOD WHOLESALING

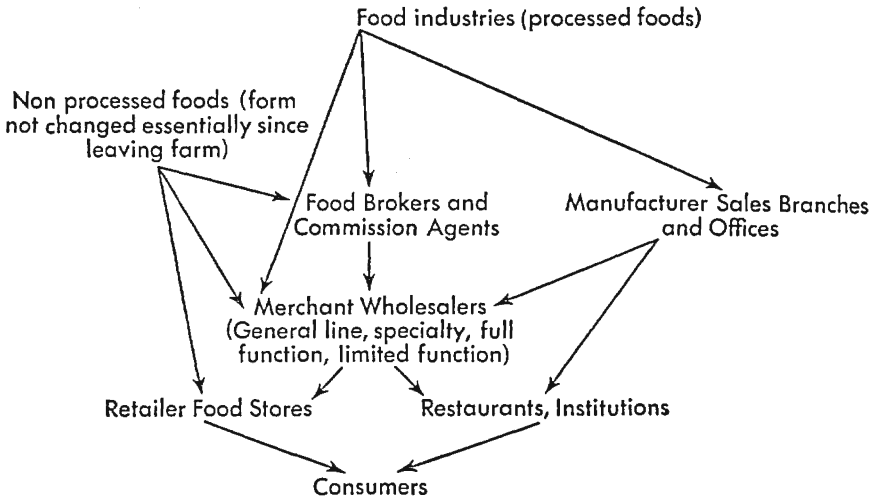
The food wholesaler operates between the food processor and the retailer. The up-to-date food retailer stocks relatively small amounts of literally hundreds of widely different items. Retailers, who are primarily interested in the problems which arise from servicing their customers, could not possibly search out and deal with the producer and processor sources of all his products. And on the other hand, processors could not in most circumstances profitably service the small unit needs of the retailer. To assemble efficiently these various products in reasonable quantities from the relatively specialized processors and to sell them in small quantities is the job of the food wholesaler. As we can see in the following diagram,

[1] The source of the statistical data used in this chapter has been the United States Census of Business: *Wholesale and Retail Trade*, 1948.

the merchant wholesaler who actually buys and brings the needed products together is a focal point in the distribution scene.

Too, as we mentioned in the last chapter, many processors perform the functions of a wholesaler for themselves. Through sales offices and branch warehouses, they can contact and service retailers directly. On the other hand, many processors who do not have an adequate line or volume

STRUCTURE OF WHOLESALE-RETAIL FOOD DISTRIBUTION


Food industries (processed foods)
Non processed foods (form not changed essentially since leaving farm)
Food Brokers and Commission Agents
Manufacturer Sales Branches and Offices
Merchant Wholesalers (General line, specialty, full function, limited function)
Retailer Food Stores
Restaurants, Institutions
Consumers

of products may utilize food brokers and commission men to act as their salesman. As in the case of the other brokers and commission men which we have already studied, this group of middlemen does not take ownership of the products. It merely searches out potential sales outlets for processors and keeps the processor informed of trade conditions and needs for a fee.

*Types of Wholesalers*

Merchant wholesalers may be classified on the basis of the functions they perform. The service or full-function wholesaler performs all of the various marketing functions to some degree. He is an expert in the buying of goods, and the retailer often looks to him for advice on what to stock and how to merchandise individual items to the best advantage. He extends a line of credit and delivers to his retailers. Since he must be able to furnish retailers with small quantities at frequent intervals, he stores large amounts of food in the form of inventory stocks.

In contrast, the limited-function wholesaler does not perform this complete array of services. He may be a cash-and-carry merchant, extending no credit or giving no delivery. He may set up order-size requirements for

his customers, thus requiring them to order larger amounts less frequently. Many of the manufacturers' sales branches are in this classification of the limited-function wholesalers.

In addition to this functional basis, wholesalers may be classified as to the kind of goods which they handle. The general-line grocery wholesaler will stock a wide variety of goods so that a retailer can secure all of his needs from one wholesaler (with the usual exception of meat). The 1948 Census of Business estimated that the sales of the average general-line merchant grocery wholesaler were as follows:

| *Type of Commodity* | *Percent of Sales* |
|---|---|
| Canned goods | 35 |
| Other groceries | 31 |
| Tobacco products | 8 |
| Soaps | 5 |
| Coffee | 5 |
| Fresh fruits, vegetables | 4 |
| Confectioneries | 2 |
| Other goods | 10 |

In contrast to the general-line wholesaler is the specialty wholesaler. He handles only one or a few closely related lines. For example, he may specialize in fruits and vegetables, meat, flour, breakfast cereals, and so on. A large portion of the food wholesale business is done by the general-line wholesalers. The specialty wholesaler, however, has had a strong attraction for food processors. The processor can expect a specialized wholesaler to become an expert salesman for his particular product. He also may find such a wholesaler more likely to cooperate closely in processor-originated advertising and sales campaigns to push particular goods.

### *Structure and Operation*

Table 1 shows the number and sales of the major types of wholesalers directly serving the grocery retailer. Merchant wholesalers of various kinds are the most important type of wholesaler selling to grocers. Generally speaking, commission agents and brokers do relatively little business directly with retailers. They operate more closely with other wholesalers.

Compared to processing industries, wholesaling is a small unit operation. Over half of the merchant grocery wholesalers in 1948 employed between ten and fifty men (Table 2). This group also accounted for over half of the total sales of this kind of wholesaler. Well over half of the merchant wholesalers have an annual sales volume of under a million dollars. Table 2 also illustrates the difference between the merchant whole-

saler who operates a warehouse and handles goods, and the broker who is only a contact man doing no physical handling. Over 90 percent of the brokers employ under ten people. In fact, one-fifth of the brokers operate without any paid employees and another fifth have only one other person working for them.

TABLE 1. *Types of Wholesale Food Agencies, United States, 1948*

| TYPE OF ESTABLISHMENT | NUMBER OF ESTABLISHMENTS | SALES FOR THE YEAR (MILLION DOLLARS) | PERCENT OF SALES MADE TO RETAILERS |
|---|---|---|---|
| Merchant wholesalers: | | | |
| Groceries, meat, confections | 17,345 | 11,357 | 72 |
| Dairy and poultry products, fresh fruits and vegetables | 13,539 | 7,501 | 62 |
| Manufacturers' sales branches and offices: | | | |
| Groceries, meat, confections | 3,514 | 7,967 | 63 |
| Dairy and poultry products | 723 | 955 | 76 |
| Agents and brokers: | | | |
| Groceries, meat, confections | 3,171 | 5,487 | 14 |
| Dairy and poultry products, fresh fruits and vegetables | 1,155 | 1,778 | 19 |

TABLE 2. *Annual Sales and Number Employed by Wholesale Grocers, 1948*

| SALES VOLUME PER FIRM | MERCHANT WHOLESALERS | | EMPLOYEES HIRED PER FIRM | MERCHANT WHOLESALER | | AGENTS AND BROKERS | |
|---|---|---|---|---|---|---|---|
| | NO. OF FIRMS | ANNUAL SALES | | NO. OF FIRMS | ANNUAL SALES | NO. OF FIRMS | ANNUAL SALES |
| | PERCENT OF TOTAL | | | PERCENT OF TOTAL | | | |
| Under $300,000 | 11 | 2 | 0–3 | 14 | 2 | 70 | 34 |
| $ 300,000 to $ 499,999 | 15 | 4 | 4–9 | 25 | 9 | 23 | 33 |
| 500,000 to 999,999 | 31 | 16 | 10–19 | 28 | 19 | 5 | 15 |
| 1,000,000 to 1,999,999 | 26 | 27 | 20–49 | 24 | 33 | 3 * | 18 * |
| 2,000,000 to 4,999,999 | 13 | 27 | 50–99 | 6 | 16 | | |
| 5,000,000 and over | 4 | 24 | 100-and over | 3 | 21 | | |
| All firms | 100 | 100 | | 100 | 100 | 100 | 100 |

* Twenty employees and over.

Nearly two-thirds of the merchant wholesalers operate as independent, single-firm units. As is to be expected, this is not true of manufacturers' sales branches. When a manufacturer is large enough to establish his own

wholesale facilities, he will generally have more than one unit. Three-fourths of all grocery manufacturers' sales branches are operated by companies which have twenty-five or more branches scattered throughout the country.

The Census of Business reports the operating expenses of the average general-line grocery wholesaler to be 8.1 percent of his sales volume. A manufacturer's sales branch carrying grocery stocks had operating expenses of 8.3 percent of sales. One study showed that of wholesalers' total operating costs, general administrative expenses accounted for 34 percent, selling expenses for 22 percent, delivery for 19 percent, and warehousing for 25 percent.[2]

## FOOD RETAILING

It will be recalled that retailing accounts for about 40 percent of the total marketing charges for food (see Chapter 5). It is the most expensive single stage in the marketing process. Retail food stores are the major consumer outlets for agricultural products. The only other substantial consumer outlets for food are restaurants and other large-scale eating places. It has been estimated that approximately 16 percent of the total civilian food supply is marketed through these various commercial eating places.[3]

The retailing part of the marketing channel has long been ignored by those interested in the problems of agricultural marketing. This has been a serious omission. Not only is retailing the most expensive operation, but the nation's grocers are also the farmers' sales representatives to the final consumer. Efficient marketing of farm products depends to a considerable degree on efficient, progressive, and well-informed retailing.

### *Prices Ultimately Determined at Retail Level*

Many people believe that prices are finally "set" at the terminal markets, and, to these prices, processing, wholesaling, and retailing margins are merely added to establish the prices for consumers. Though the mechanics of pricing make this appear true, in the final analysis prices are ultimately determined at the retail level. Here the demand of consumers is matched against the supply being offered. All of the other prices in the marketing channel are reflections of the ultimate price which moves products into consumption.

[2] Survey by the Wholesale Grocer's Association reported in *Weekly Digest of Food Distribution*, November 3, 1951.

[3] Lester C. Sartorius, *Eating Places as Marketers of Food Products*, USDA, Marketing Research Report No. 3, 1952.

There are several reasons why prices *appear* to be finally determined at earlier stages in the channel. First, there are time lags of various lengths between the time that farm commodities are sold by farmers and the delay involved for these commodities to be processed into food and offered to consumers. This lag in time gives rise to such statements in the press as, "Today's lower livestock prices will soon show up as lower meat prices in the butcher shop." A statement closer to the truth would be that "today's lower livestock prices reflect the lower prices which retailers will find necessary to move the current offerings of meat into consumption." In other words, most marketing agencies are continually matching current supply against anticipated demand in the future. The question asked by marketing middlemen is always, "How much can I afford to pay today against what I might get tomorrow?" It is this aspect of anticipation which gives the illusion of prices actually being set early in the marketing channel. A considerable amount of wholesale price fluctuation can be attributed to mistakes made by market people in their forward guesses.[4]

Secondly, there are often many consumer products made from an individual farm commodity. For example, from livestock comes not only meat but also hides, lard, tallow, and many other by-products. The price of the farm commodity is determined by the composite prices of all the resultant products. The retail prices of all these products may not move together.

Thirdly, retail prices fluctuate much less than wholesale prices. Part of the reason for this stems from the belief of retailers that consumers dislike fluctuating prices. Acting on this premise, retailers will take smaller margins for a time, as wholesale prices move upward and hold the retail price line. They may make a substantial jump in retail prices after the margin squeeze has been occurring for some time. In times of falling prices, the reverse situation tends to be true. To this must be added the mathematical fact that a small change in retail prices means a larger change in wholesale and farm prices because of the fixed marketing charges. (Refer again to the illustration of this given in Chapter 5.)

Fourthly, we have already mentioned that processors and marketing people do not passively accept consumer judgment and reaction. Competition is not perfect, and individual firms can exert some influence over prices by controlling their output. The extent to which this distortion of consumer wishes is possible will depend upon the existence of the factors explained in Chapter 7.

[4] For an excellent discussion of this area, see W. Waite and H. Trelogan, *Agricultural Market Prices*, 2nd ed. (New York, Wiley, 1951), chs. 6 and 8.

### *The Job of Retailing*

The retailer is the principal partner of the food wholesaler in the marketing process of dispersion. Like many wholesalers, the retailer will perform all of the marketing functions to some degree. He continues the breakdown job of the wholesaler. For example, the fruit and vegetable wholesaler may purchase several bushels of apples and sell only a bushel or two to a retailer. The retailer in turn will sack them up and sell them to consumers in five-pound lots. In satisfying the wants of his customers, the store operator must stock a wide variety of goods. He must not only have canned peaches, but also several brands of canned peaches. He continually sorts and discards to maintain a salable quality of perishables. Through advertising, he furnishes information to his customers as to price, quantity, and quality of goods that are available. Duddy and Revzan have perhaps best summed up the job of retailing as follows:

> Retailing is, perhaps, the most difficult part of the marketing process to perform, and certainly is the most expensive. It employs more people and is subject to more criticism than is any other segment of the marketing structure. For vast numbers of consumers living in cities who lack direct contact with the primary sources of supply, the retail store is the only means of access to the essentials of living. For producers of consumers' goods, the retail store is the ultimate point of contact with the users of their products. Here in the retail store the battle of the market is fought out to a final conclusion.[5]

### *Structure and Operation*

There are about one-half million retail food stores of various types in the country. These, plus nearly 350,000 eating and drinking places, sell food directly to the nation's consumers. Table 3 shows the relative

TABLE 3. *Retail Food Outlets in the United States, 1948*

| TYPE OF STORE | NUMBER | PERCENT OF TOTAL NUMBER | PERCENT OF TOTAL SALES |
|---|---|---|---|
| Groceries with meat | 223,662 | 44 | 67 |
| Groceries without meat | 154,277 | 30 | 13 |
| Meat and fish markets | 29,465 | 6 | 6 |
| Fruits and vegetables | 15,763 | 3 | 1 |
| Bakery stores | 20,152 | 4 | 2 |
| Candies, nuts, confectioneries | 32,876 | 7 | 2 |
| Other specialty stores | 28,244 | 6 | 9 |
| Total outlets | 504,439 | 100 | 100 |

[5] Edward A. Duddy and David A. Revzan, *Marketing, An Institutional Approach*, 2nd ed. (New York, McGraw-Hill, 1953), p. 150.

importance of the various types of retail food stores. By far the most important type of retail food outlet is the complete grocery store which also handles meat. This type of store makes up nearly one-half of the total store population and accounts for two-thirds of the total food sales.

Basically, food retailing is organized into relatively small, independent units. Over 90 percent of the total number of food stores are operated as independent, individual units owned by individual proprietors or partners. This large group does nearly two-thirds of the total retail business.

Over half of the stores have no employed help in addition to the owners (Table 4). Half of the food stores did under $30,000 annual business in 1948. It takes no mental giant to conclude that the net returns to the owners of this group of stores must be very small indeed. These are the "Ma and Pa" stores—the retail counterpart of the subsistence farmer. Though making up a large share of the store population, these small stores do a relatively small share of the total food business. Stores in this large group are very often high cost stores. Their volume is too small to make practical the utilization of much of the cost-saving technology of modern food merchandising. However, this group often sells service in addition to food. They are the convenient neighborhood stores, extending credit, offering delivery, and often staying open nights and Sundays. Therefore, one must use considerable caution in directly comparing the price of goods sold through these stores with other types of grocery stores.

At the other extreme is a very small group of stores having a very large volume, employing many people, and selling over a third of the

TABLE 4. *Sales Volume and Employee Distribution of Food Stores, 1948*

| ANNUAL SALES VOLUME | | | AVERAGE NUMBER EMPLOYED | | |
|---|---|---|---|---|---|
| SALES VOLUME | STORE NUMBERS | ANNUAL SALES | NUMBER OF EMPLOYEES | STORE NUMBERS | ANNUAL SALES |
| | PERCENT OF TOTAL | | | PERCENT OF TOTAL | |
| Less than $10,000 | 21 | 1 | None | 54 | 16 |
| $ 10,000 to $ 19,999 | 16 | 4 | 1 | 15 | 10 |
| 20,000 to 29,999 | 13 | 5 | 2 | 10 | 9 |
| 30,000 to 49,999 | 18 | 10 | 3 | 6 | 8 |
| 50,000 to 99,999 | 18 | 19 | 4–5 | 6 | 10 |
| 100,000 to 299,999 | 10 | 24 | 6–7 | 3 | 7 |
| 300,000 to 499,999 | 2 | 10 | 8–19 | 4 | 19 |
| 500,000 or more | 2 | 27 | 20 or more | 2 | 21 |
| All stores | 100 | 100 | All stores | 100 | 100 |

total food volume. These are large specialized stores. They are quite cost-conscious and anxious to find and put into practice the latest merchandising developments. Often these are cash-and-carry stores. They depend largely on low cost operations, not service, to meet competition.

The modern food store is one which offers hundreds of different products and brands. Some of these products move rapidly in large volumes, others have a very slow turnover. Some are highly perishable, others can be stored for long periods of time without appreciable spoilage. Some products require large areas for proper display, while others can be merchandised in relatively little space. From the buying and selling of this wide selection of products, the retailer must secure enough margin out of which he can pay his operating expenses and make a profit.

Items of high and low markups on cost vary widely within an individual store and between stores in a particular area, as well as between areas. One study found that corporate chains handled 24.5 percent of their total sales at markups of 14 percent or less; 6.7 percent of total sales were handled at markups of 25 percent or more.[6] In some intances, high markups may be associated with high costs of handling. Generally, however, it may be said that the markups are more closely related to what the traffic will bear than to the cost of handling an individual item. Over the years, habitual rule-of-thumb markup practices have developed. These have been gradually accepted as "fair" and followed more or less blindly. There is evidence that many retailers do not know what markup they are taking on various products. A study of ten stores, for example, found that all ten operators said they were taking a markup in their fresh produce department of about 25 to 30 percent. In all but one store, however, it was found that the actual markups were nearer 40 to 50 percent.[7] There is growing evidence that many food items are habitually at markups which do not cover costs while other items carry extremely high markups. Some items and departments are often used as leaders to attract customers into the store. The store owner is primarily interested in a profitable return from his total store operations. However, an efficiently operated, consumer-directed marketing system requires long-run, cost-price, logical relationships for different products. Otherwise the price system cannot adequately do its jobs of directing production and consumption.

[6] "Chain Store Age," survey as reported in *Profitable Methods for a Retail Store*, American Institute of Food Distribution, Inc., pamphlet, 1950.

[7] R. L. Kohls and Russell Mawby, *Retail Produce Departments*, Indiana Circular 382, 1952.

## CHANGES IN THE WHOLESALE-RETAIL STRUCTURE

### *The Corporate Chain Store*

One cannot study the pattern of food retailing without giving some attention to the development of chain food stores. The origin of chain retailing is usually traced back to the establishment of the Great Atlantic and Pacific Tea Company in 1858. However, it was not until after World War I and during the decade of the 1920's that real growth occurred. By 1929, it was estimated that chain stores were doing about 38 percent of the total business of combination grocery and meat stores. Also, about this time food chains reached their peak in number of outlets.

Starting in the late thirties and continuing after World War II, chain organizations consolidated their holdings into fewer, but larger, stores. In 1948, the Census of Business reported that only 8 percent of the total food stores were operated as multiple units; the remainder were independent single units. In 1951, the trade magazine, *Progressive Grocer*, estimated that 38 percent of the combination grocery and meat store business was done by chains. Interestingly enough, this was the same proportion as reported in 1929.

Originally the chain store organization collected several retail outlets under one management in order to secure price advantage of large volume buying from wholesalers and processors. At the retail level they adopted the policy of cash-and-carry. They aimed for low cost, large volume operations, and competed with low prices instead of with service.

As time moved on, however, chains have not been satisfied with horizontal expansion into more retail outlets. They have moved to integrate vertically. They have become their own wholesalers, often buying directly from growers in the production areas. They have acquired various processing facilities, so as to broaden their control over the marketing channel. Large chains have acquired canning companies, cheese and butter firms, bakeries, and other miscellaneous food processors. These firms operate under the brand label and standards set by the chain. Chains also take large portions of the output of independent processors who meet the standard and use the brand label of the chain.

### *The Voluntary Chains* [8]

As has been so often the reaction of those who stand to lose from change, the small retailers and service wholesalers attempted to fight the

[8] See Duddy and Revzan, *op. cit.*, ch. XIII, "Defenses of the Independent Retailer," for a more complete discussion.

chain store development through the courts. In many cases discriminatory antichain tax legislation was enacted. Resale price maintenance laws were passed which were intended to protect the small operator. But as also has been the case, the real defenses of independents against the chains were found not in the courts, but rather in improving their own operations so as to better meet the competitive threat of the chains.

Since both the independent retailer and the service wholesaler had much at stake, it was logical that these two groups develop some kind of joint action. This joint action took the form of retailer-owned wholesalers, and the wholesaler-sponsored, voluntary retail chains. In some instances, independents organized to purchase and operate their own wholesale facilities cooperatively. In other instances, a service wholesaler brought together several retailers into a voluntary chain in which the wholesaler offered many services in return for the guaranteed business of the participating retailers. Both developments represented an effort to secure the low price benefits of the mass buying power of the corporate chain and at the same time retain whatever advantages there might be from owner operation of the independent store. In addition, the larger voluntary chains, such as the Independent Grocers' Alliance, have made available such important services as advertising programs, store layout and design advice, and pricing guides.

Voluntary and cooperative wholesaler-retailer groups have become a very important part of the food retail picture. The *Progressive Grocer* estimated that in 1950 such groups did 33 percent, corporate chains 38 percent, and unaffiliated independents 29 percent of the total grocery business. Such groups also have become an important part of the wholesale picture (Table 5). Though only one-fifth of the total grocery wholesalers is owned by or directly affiliated with groups of independent retail stores, this group accounts for about two-fifths of the business volume.

TABLE 5. *Amount of Affiliation of General Line Merchant Wholesalers, 1948*

| TYPE OF WHOLESALE OPERATION | NUMBER OF FIRMS | ANNUAL SALES VOLUME |
|---|---|---|
| | PERCENT OF TOTAL | |
| Not sponsoring cooperative groups | 69 | 58 |
| Voluntary group wholesalers | 15 | 28 |
| Retail, cooperatively owned warehouses | 5 | 10 |
| Cash-and-carry depots and others | 11 | 4 |
| All wholesalers | 100 | 100 |

In addition, even many of the nonsponsoring wholesalers have developed many kinds of buying plans and other arrangements in order to give their customers special competitive advantages.

*Self-Service and the Supermarket*

Two of the most important recent developments in food retailing have been the rise of self-service and the growth of the supermarket. Both of these developments have occurred to a major extent since the end of World War II.

Self-service has been an outgrowth of both the scarcity and high cost of labor. In the self-service operation, merchandise is mass-packaged in consumer-sized units and displayed for the consumer to make his own selection. Store personnel limit themselves to keeping the shelves stocked and checking out the consumer with her purchases. In this way, the consumer undertakes much of the work previously done by store employees. The acceptance of the self-service idea has been a rapid one. The *Progressive Grocer* estimated that in 1951, nearly three-fourths of all the grocery business was done in stores which, in the main, were self-service. In fact, the self-service principle has been spreading into many other retail fields such as drugs, clothing, and hardware.

Along with self-service has come the supermarket operation. No completely acceptable definition of a supermarket has yet been worked out. Basically the supermarket is a large volume operation carrying such a complete line of foods that the consumer can purchase all her needs at the one store. The merchandise has been departmentalized and is, to a very great degree, arranged for self-service. Supermarkets are operated both as units of corporate chains and as independent stores. In the main, however, supermarkets have provided one way for independents to compete effectively with chains. It was estimated by a supermarket trade journal that of the approximately 15,000 new units built in 1951, about one-fourth were built by large corporate chains, about one-third by operators of from two to twenty-five stores, and the remainder by single independents. The same source estimated that about two-fifths of all the grocery store business was transacted in supermarkets in 1951. It is not unusual in towns and cities which have a great number of grocery outlets for two or three supermarkets to do well over half of the total grocery business of the community.

The early growth of the supermarket came from its vigorous high-volume, low-price policy. Customer services, such as credit, delivery, and personal attention were nearly eliminated. The large volume handled

enabled the store to departmentalize its bookkeeping and personnel. The volume was large enough so that specialized management could be used. No longer did the store manager have to divide his time among the various jobs of being a clerk, stockman, and janitor. With departmentalized records, the manager could study the cost-and-profit performance of various departments. He could even hire specialized department managers. The advantages of specialization could now be utilized in the grocery business. Too, the early success of many supermarkets was due, to some extent, to the appearance of the store. New, bright, sparkling stores, carrying a wealth of fairlike displays were a tremendous departure from the small, drab, and often dirty stores about which many housewives had long complained.

The future of this development is uncertain. The business cream has now been skimmed off. Supermarkets are now competing with supermarkets. Many are now adding a wide range of nongrocery lines until the modern supermarket often looks like a superbly dressed copy of the old general store. Many are also reintroducing many of the discontinued services in order to attract customers. Will these developments send cost of operations up again?

Regardless of the future, we can safely say that the wholesaling-retailing part of food marketing has made vast improvements within a few years. The corporate chains, the voluntary wholesale-retail groups, and the self-service supermarkets have all had a part in giving the backwoods cousin of the marketing machinery, retailing, a great push forward. Retailing will always remain a relatively expensive phase of marketing. The functions it must perform are varied and complex. However, recent developments show that substantial improvements are possible. And what is of major importance, there appears to be a new desire on the part of food wholesalers and retailers to search actively for new and better methods and put them into practice.

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CHAPTER TWENTY-FIVE

# *Summing Up*

We have now had an introduction to some of the more important concepts of marketing. We initiated our study with a broad view of the marketing task. Production is undertaken for consumption purposes. The responsibility of the marketing machinery is to coordinate production and consumption. In doing this, certain marketing functions must be performed. Some of these, such as storage and transportation, we examined in considerable detail. Pricing, which is the result of the functions of buying and selling, received our attention. We then turned to specific agricultural commodities and studied their particular marketing structures and problems. The place of cooperatives, the role of government, and finally the businesses engaged in food processing, wholesaling, and retailing received our attention. Now it is proper to pull some of these many details back into focus and perspective. We must also point out some of the areas which have been treated lightly or not at all. For it should be evident now that the introductory statement made in the first chapter is very true. This has not been a complete book on agricultural marketing. It can only open wide the gate to the desire for further exploration in a very complex field.

## THE BIG PICTURE AGAIN

We have been exposed to a wide variety of detail. There is always danger in the separate study of small parts, as anyone knows who has attempted to assemble a jig-saw puzzle without the master picture to guide him. One is likely to assume that each part represents a peculiar and unrelated problem. Too, as the deficiency of each of the parts of the marketing machinery is stressed, one may begin to think that very little that is good exists in this marketing system of ours.

On the contrary, instead of being impressed with these shortcomings,

the really astounding fact is that our agricultural marketing machinery works quite well. The multitudinous agricultural commodities of various degrees of perishability and quality are effectively assembled from the many small volume producing units. The machinery adjusts itself to tremendous fluctuations in volumes which occur both seasonally and from year to year. These commodities, or products derived from them, are funneled into the hands of consumers whose desires and ability to buy vary widely and who are crowded into small congested areas far from the areas of production.

Yet these consumers are among the best fed people of the world. Relative to other countries, Americans spend less of their incomes to secure this food. Think of it! Every day of the year, most of the 12 million people of New York City can secure at a price a head of lettuce at their grocery store. And this very perishable lettuce often has come by truck, rail, and boat from far-away California. Consumers can buy bread which is baked fresh daily. They can have their milk delivered at their doorstep—and what is equally important, they can be assured that it is safe to drink. They can assemble their meals by picking and choosing from literally hundreds of different items at their grocery stores. When we think of it in this way, it is not the high costs of the system which are remarkable. Rather the real phenomenon is that we have assembled the combination of technology and business organization that gets the job done at all!

The comparative well-being of the American consumer is a result of a well-integrated team. The bread which consumers eat is a combined result of the wheat producing success of farmers, the productive efforts of wholesalers, millers, bakers, and retailers, and the policing and regulatory efforts of society working through its government. All groups contributed to placing the loaf of wholesome bread into the hands of consumers at a price they would pay. The argument over which member of the team is most important is a game played by the misinformed. All are necessary to get the job done.

There is nothing which compels the marketing machinery to mesh production efficiently to consumption. Efficiency in the production of farm products does not assure efficient marketing. Neither is the reverse true. In the course of our discussion, we have cited several examples wherein there are considerable waste and inefficiency. So the job which is apparently well done is not quite satisfactory to those who see where improvements can still be made. This continued search for improvement is one of the reasons why it is easy to overemphasize the shortcomings of our marketing system.

We should also remember that it is the purpose of this book to

emphasize the aspects of marketing which are of the most immediate and practical concern to farmers. The discussion of the various commodities gave more attention to marketing from the farmer's viewpoint. Only a brief survey has been made of the marketing organization and problems of processors, food wholesalers, and retailers. This division of attention was forced by limitations of space rather than relative importance. We know that marketing is not completed until the finished product is sold to consumers. Many of the real problems in agricultural marketing occur in the marketing channel often after the farmer thinks marketing has been finished. For example, it may be far more important from the viewpoint of over-all marketing efficiency to improve the retail handling of meat and bottled milk than to improve the country assembly of livestock and milk.

## PROBLEMS OF CHANGE

The marketing machinery is a changing one. Solutions which are adequate today may be woefully inadequate tomorrow. Changes may be initiated by some change in the production machinery. They may be initiated by changes in the consumer and his actions. Or they may originate with new developments in the marketing processes themselves. Wherever they initially occur, however, the repercussions will be felt throughout the entire marketing channel.

We have seen examples of various types of changes. As our country has expanded over the years, the relationship of production and consumption areas has changed. This rearrangement has resulted in the rise of new marketing centers and the decline of old ones. It has left excess processing capacity for some of our industries scattered throughout the country. Changing production technology has also had its effect. For example, the increase in the efficiency of egg production per hen reduced the supply of poultry meat from this source but helped make possible the rapid expansion of the broiler industry. Increasing specialization in many of our farm enterprises, such as dairying, has given increasing emphasis to marketing.

Consumers, too, have changed. With increased urbanization and smaller families, the demand for smaller purchase units has increased. The turkey industry has had to recognize this by developing a smaller-sized product and by merchandising turkey parts. Retailers have had to adjust by continually reducing the size of their sales unit. Consumers' tastes and preferences have also changed. We have seen the ramifications of one of the demand shifts—the decreasing desire for animal fats—in two instances. One was the problem created by the consumers' desire for leaner pork. This raised issues of adequate grading standards and buying

practices for hogs. Another was in the area of milk marketing. Here the major pricing methods were still basing the value of whole milk on the butterfat content, even though it was evident that butterfat value was a declining source of milk value.

Within the marketing area proper, we have noted the results of technological change. Improved transportation and refrigeration have made long hauling practical. New technology has permitted improvement in methods of grading and quality control. The development of the integrated retail grocery chain, self-service, and the supermarket has had its repercussion in wholesaling, processing, and even in the buying structures at producer levels.

Such a few examples merely serve to illustrate that changes occur and always have consequences. These consequences pose new methods which always must be evaluated. It is this evaluation process which throws down the gauntlet to the status quo. Any method of doing a job soon develops groups of people who have a vested interest in its continuing operation. Change will often mean a loss of invested capital or even a loss of jobs for them. The natural reaction of such groups is to fight the change. The existing situation is often "right" because it is in operation. In such battles the objective is to win, not necessarily to present an unbiased picture. From this comes one of the cardinal rules in evaluating a controversial subject: Ascertain who is involved and what they have to gain or lose. Armed with this knowledge, we will be in a better position to give our best judgment to the decision at hand.

*Decentralization*

Perhaps one of the most general changes which has occurred has been the decentralization of the concentration process of marketing agricultural products. Old established central wholesale markets and associated institutions have declined in importance as buying agencies have increasingly moved into producing areas. We noted this tendency in livestock, eggs, dairy products, and fruits and vegetables.

Basically much of this change was initiated by a changing transportation situation which has removed the dependence on the railroads. With this decentralization have come other changes and problems. The system of collection of news from only the large central markets is no longer adequate. Old established pricing habits are no longer satisfactory. The regulatory machinery which was established to cover the old centers must be extended to provide the needed supervision of the newer marketing channels. Such circumstances put increasing responsibility on the individual farmer-seller for selecting the most advantageous outlet.

*Integration*

Another general development in most marketing channels has been an increasing degree of vertical integration. Food processors have extended themselves both backward to producers and forward to retailers. Retail organizations have integrated under their management wholesaling, processing, and, in many instances, producing area procurement. Farmers' cooperatives have also been active in this integration process. Such developments of large integrated firms often have offered considerable opportunities to reduce marketing costs. However, integration has also given us an additional challenge to maintain an effective competitive structure. No longer can the competitive assumption of multitudinous, small, independent firms be indiscriminately made.

*Increasing Market Size*

For almost all commodities, the real market area has been increasing. The increasing versatility of transportation and the growing communications network have increased the area wherein buyers and sellers have facilities to trade with one another. Many markets which once were only local in nature have now become regional or national in scope. For example, milk can now be transported long distances in tank cars. On the distribution side, paper containers have extended the effective market area of a dairy plant. Perhaps the most outstanding example of this has occurred with fresh fruits and vegetables. Fresh lettuce from the Salinas Valley of California can now compete with lettuce grown near the large consuming centers. Consumers in almost any city in the nation have at their disposal the products of the farms of the entire nation.

The challenge is for the marketing system to grow up to the potentialities of this broad national market. Increasing attention must be given to the barriers of trade which arise from differences in regulatory measures of different states. It also means that it is of increasing importance that such things as grading standards, health requirements, and truck regulations be made uniform over these wide areas. If we are to exploit the potentialities of such a broad market, barriers which limit our efforts or increase our costs must be removed.

## THE PRIMARY ROLE OF THE CONSUMER

We have always maintained that servicing consumer desires is one of the basic objectives of our marketing system, and in the final analysis under competitive conditions the consumer directs the entire process. This

means that the freedom of consumer choice is a freedom to be guarded jealously. It is upon this freedom that the framework of consumer direction is built. The freedom of choice is more than a privilege of consumers to accept or refuse an offered situation. It is a very limited freedom of choice, indeed, which permits the consumer the right to accept or refuse milk delivered to the home if he is not offered the opportunity to purchase it under other circumstances.

*Consumer Education*

If the marketing system is to be consumer directed, then how the consumers behave is of primary importance. Such direction, if it is to be successful, requires that consumers be informed. It is axiomatic that a successful democratic form of government depends upon an enlightened and informed electorate. It is just as true that an effectively competitive marketing system cannot be built upon the ignorance of consumers. If quality standards are to serve their purpose, the consumers must be aware of and accept their meaning. They must be aware that services frequently are added to products and that these services are not costless.

No one has a right to choose for the consumer, but there is an obligation to see that he has adequate information upon which to base decisions and choices. Uninformed consumers are an open invitation to chicanery and abuse. The agricultural producer who is at the other end of the marketing channel has a real stake in the field of consumer education.

*Influencing Consumer Demands—Agricultural Advertising*

It has often been pointed out that marketing institutions do not passively accept consumer judgments. They try to change and influence them. And one of the techniques most widely used in this campaign to influence consumers is advertising. No marketing text would be complete without some mention of the controversial question of agricultural advertising. Slogans such as "Eat more poultry," "Drink more milk," and "Observe national apple week" are merely a few examples of the efforts of agricultural groups to influence consumers. In fact, it seems to many people that most of the ills of agriculture could be solved by improving quality and by better salesmanship. We have already examined the limitations of the first approach; now let us briefly examine the second.

There is real confusion concerning the objective of an advertising campaign. The objective is not just to increase consumption. We must always remember that within any short-run time period, consumers will eat what is produced—no more and no less. If per capita turkey consump-

tion increases next year, no advertising campaign can take credit for this development. It will be a result of increased turkey production. The real objective is to affect the amount of money people spend for the available supply. We want to sell the same amounts at higher prices or increased amounts at unchanged prices. In other words, we want to increase the demand and shift the curve to the right. And since advertising is really a variation of the marketing function of selling, it is not costless. The final question to be answered by any group, then, is whether the net returns to the producers of the products are increased after marketing costs are deducted.

Many people have witnessed the apparent success of advertising in selling the products of the nonagricultural industries. From this they have generalized that a similar campaign by agriculture would have similar results. Such a transference of results is not completely valid. It must be recognized that the apple industry, pushing apple sales, is not in the same position as the manufacturer of Oxydol pushing the sales of its particular brand of soap. The first is attempting to increase the demand for a general product; the latter is attempting to increase its particular share of a demand for a general product. A more correct analogy to the apple situation in the above illustration would be if the soap industry in general conducted a campaign to increase the total amount of money which people spend for all kinds of soaps on the market. If we observe carefully, we will find very little of this type of advertising done by industry.

General agricultural commodity advertising must recognize two facts—first, that the stomach is only so big, and secondly, that consumers tend to spend a rather constant percentage of their incomes on food. The first is probably of minor importance. We will recall from our study of consumers that apparently American consumers are not near "stomach capacity" in their food consumption (Chapter 3, Table 3). For, after all, with increasing incomes, actual physical intake of food does increase. Perhaps the few millionaires in the country are consuming at their "stomach limit," but this group is rather small!

The second fact, however, is of a different nature (Chapter 3, Figure 1). If the portion of incomes spent for all food remains relatively constant, any increase in apple demand must come at the expense of some other food. For example, perhaps citrus demand will suffer. Then the citrus people must play the advertising game in order to hold on to their original market. Or if the citrus people are successful in increasing the demand for their product, perhaps the demand for tomato juice is the loser. Then tomato processors, too, must join the game. Will the end

result simply be shifts of demand within agriculture plus the addition to the marketing charges of the cost of advertising? And since an agricultural producer often produces several different types of products he cannot be assured that the total demand for all of his different products has been changed at all. The midwestern farmer might find that the success of his butter advertising came at the expense of oleomargarine, which is an important user of his soybeans.

There are other uses of advertising than the simple general industry approach, however. We know that selling and market information dissemination are functions which must be performed. Well-directed advertising may contribute to the more efficient performance of these functions. Consumers need to be informed about nutritional values, uses, and so on of different products. Informative advertising may be a useful tool here. For example, there is evidence that consumers feel a small pullet egg is a low quality egg. Information concerning the facts of this situation would be useful. If new products are to be introduced, advertising may be the most efficient informational and selling approach. Consumers had to be told what concentrated frozen orange juice was and how it could be used. They had to be informed concerning the proper handling of cut-up turkeys. Informative advertising can be part of the effort to make a more informed and rational consumer.

Other advertising might aid in moving commodities which in the very short run are in large supply. Periodic market gluts occur for many products. And since these products are usually perishable, they cannot be stored but must be moved into consumption or spoil. Special advertising campaigns may be quite useful in calling the attention of consumers to special price and supply situations. A concentrated selling effort might effectively increase the demand for these commodities temporarily. Such a result might even be beneficial to competing products. This would be especially true if there is a tendency for price demoralization to spread from one commodity to another.

Perhaps such a brief discussion on such a complex subject raises more questions than it answers. This is good! For it is desirable to expose this now popular "cure-all" to probing thought. General agricultural advertising cannot be compared to industry advertising of branded products. Some special situations may find advertising to be a useful way of performing a specific and timely selling and informational job. And it is also well to realize that even some of the companies which have had an apparently successful advertising program are questioning just what are the real net returns above the cost.

## MARKETING IMPROVEMENT

In our introductory chapter we suggested that the idea of marketing efficiency is a complex one. On the one hand is the problem of maximizing output in terms of consumer satisfaction. On the other is the problem of doing this with a minimum of expenditure of economic resources. We further suggested that there are two aspects of efficiency. One is the technological issue of how a job can be best done with the resources and know-how at hand. The other is the economic issue of maintaining competitive conditions so that consumers, through the market place, can both secure their wants and make their desires known.

### *Increasing Efficiency*

Time and time again we have examined ways in which the technological efficiency is being improved and could be further improved. Examples were often given of labor saving arrangements, new machinery, new processes for control of quality, and new methods to cut costs. Certainly in many areas science and invention are offering many opportunities to do the job better or even produce a better product.

In many instances it was suggested that costs could be lowered if the volume of operation of individual firms were increased. It was pointed out that many grain elevators could reduce their unit costs if they could secure a larger volume. Many of our livestock and poultry buying agencies are operating at less than optimum size. Milk routes could be advantageously consolidated. We have seen how many firms have integrated either horizontally or vertically in their efforts to obtain larger volumes.

Against these possibilities of greater operating efficiencies from increased size has always loomed the question of what would be its effect on the economic efficiency of marketing. What would be its effect on the consumers' freedom of choice? To obtain lower marketing costs would not in itself be desirable if, in obtaining them, we fostered conditions by which the marketing agencies secured increasing monopoly power. The end of marketing improvement should be not only more for the marketing firms, but rather more for all.

It was as an aid to understanding this issue that we studied aspects of imperfect competition, government price programs, and government regulatory laws. The challenge is to develop a sound marketing policy. Bench marks must be developed for judging the adequacy of competition. We have seen that large numbers alone are not the key. Large national giants are not necessarily less competitive than small isolated local

establishments. In many students' judgment, we have made more rapid progress in the areas of technological efficiency than in this latter area of economic efficiency.

However, there is good reason to be optimistic about the prospects for future improvements in the marketing system. Sweeping cure-alls, of course, are highly improbable. The amazing complexity of the different problems defies any blanket solution. Improvements in the future, as in the past, will come piecemeal. Some will seem rather insignificant in themselves. For example, recent research has uncovered ways of improving the check-out service in retail food stores, how to rearrange milk receiving rooms in dairy plants, and how to grade products more effectively. None may be of major importance in itself. But many small improvements added together can make a substantial contribution.

We cannot afford to wait for the perfect solution to a marketing problem. Each new partial suggestion must be evaluated for potentialities as a step forward. Waiting for the complete and correct answer may mean waiting forever.

Research, both public and private, will continue to pose new propositions. These must be tried and tested and then accepted or rejected. Over a period of time in a competitive situation, the results of marketing improvements will accrue in varying degree to all sectors of the economy. The consumer will receive more or better products and satisfaction for his expenditures. The marketing firms that operate most efficiently and best serve producers and consumers will benefit. Farmer producers will receive more for what they sell or have the opportunity to serve a growing market.

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Date: 19.8.94